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Lee et al.

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(45) **Date of Patent: Jul. 17, 2001**

(54) **KEYBOARD WEDGE SYSTEM CONFIGURED FOR DATA PROCESSING OVER A KEYBOARD HOOK**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(52) **U.S. Cl.** **710/38**; 710/31; 710/62; 710/67; 709/218; 235/462; 235/472

(58) **Field of Search** 710/62, 31, 38, 710/67; 235/462, 472; 709/218

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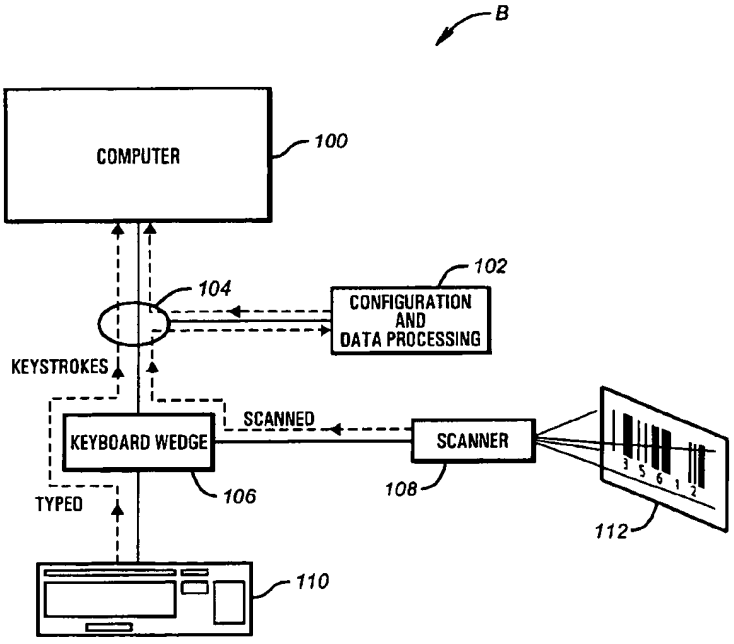
Assistant Examiner—Tammara Peyton

(57) **ABSTRACT**

A method and apparatus for processing data in a computer system from a keyboard wedged device and a keyboard hook device. The keyboard wedge converts the data into standard keyboard keystrokes for transmission over a keyboard line. The keyboard hook provides a window through which scanned data is detected. Scanned data is distinguished from typed data using a software data processing application. The software is configured to identify scanned data based on characteristics of the scanned data. Processing functions are next performed on the detected data according to the particular application being used.

30 Claims, 8 Drawing Sheets



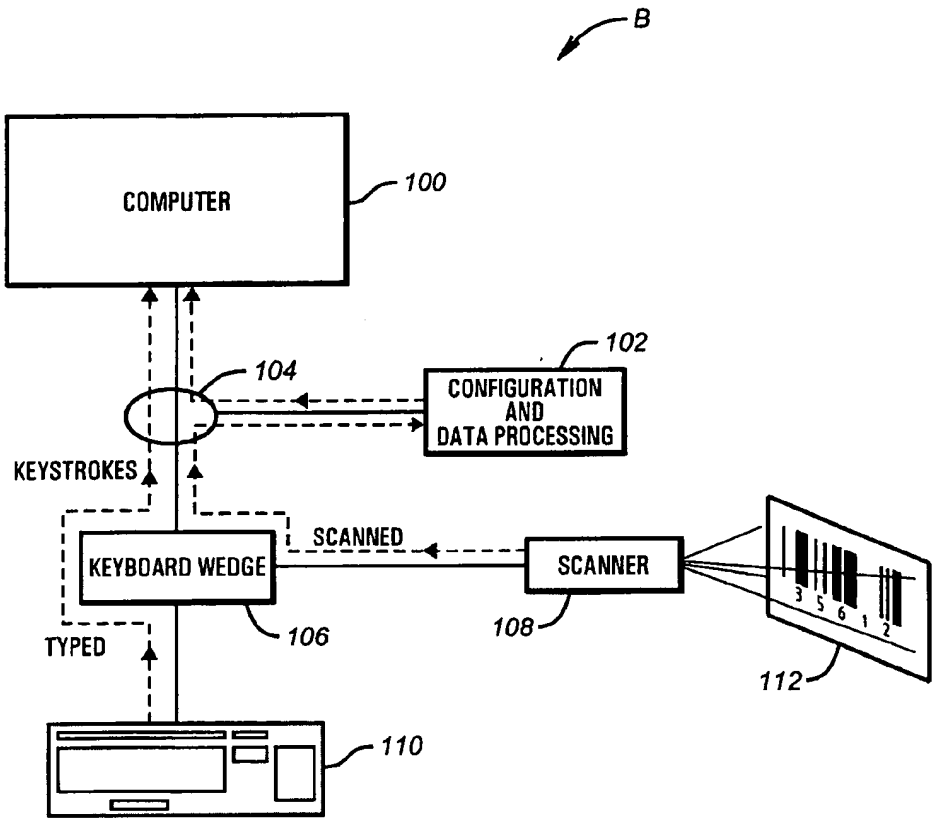

B
COMPUTER
100
102
104
CONFIGURATION AND DATA PROCESSING
KEYSTROKES
SCANNED
KEYBOARD WEDGE
SCANNER
106
108
TYPED
112
110

FIG. 1

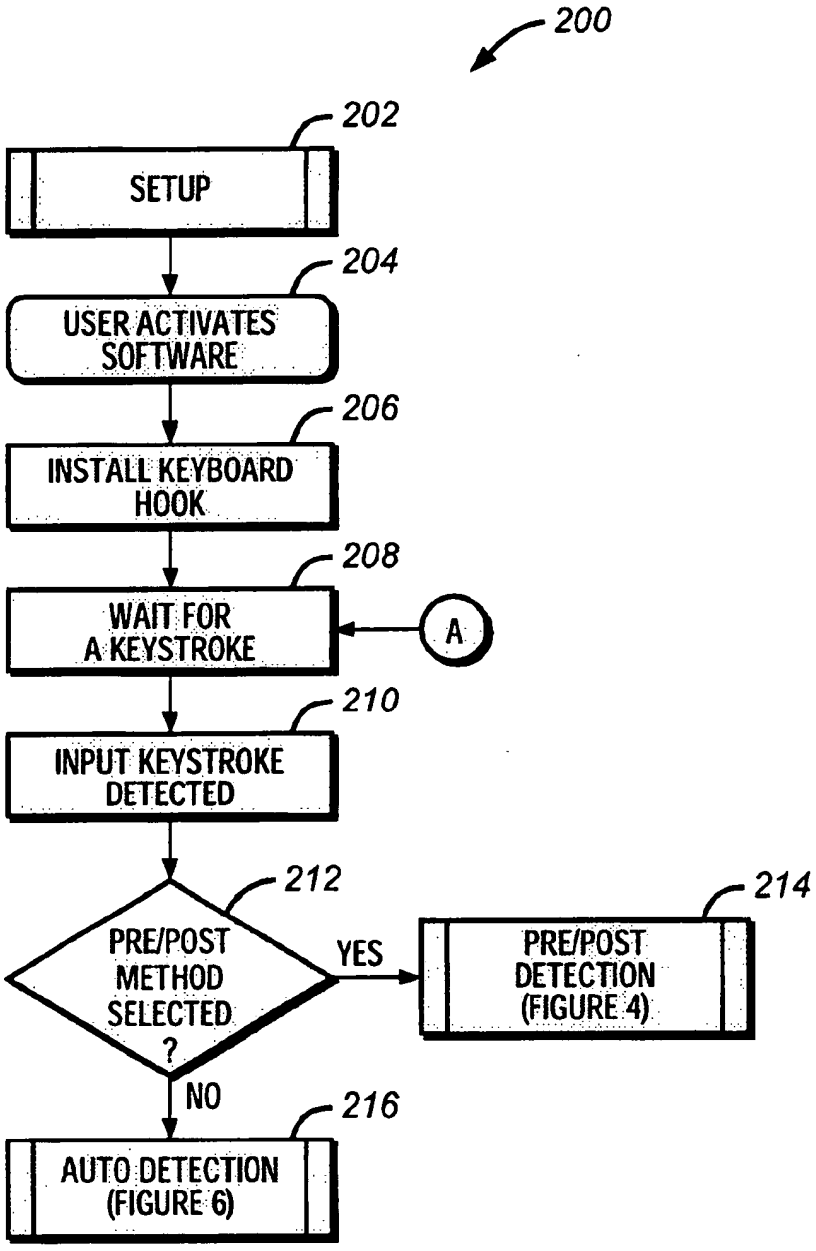

200
202
SETUP
204
USER ACTIVATES SOFTWARE
206
INSTALL KEYBOARD HOOK
208
WAIT FOR A KEYSTROKE
A
210
INPUT KEYSTROKE DETECTED
212
PRE/POST METHOD SELECTED ?
YES
214
PRE/POST DETECTION (FIGURE 4)
NO
216
AUTO DETECTION (FIGURE 6)

FIG. 2

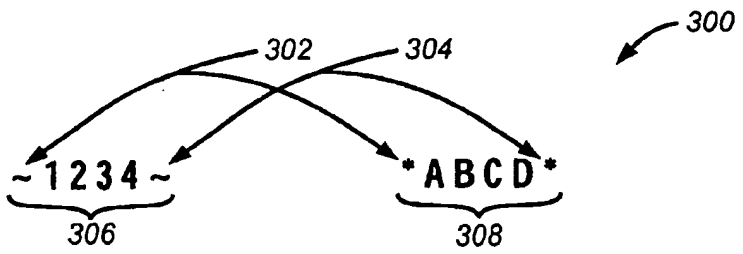


FIG. 3A

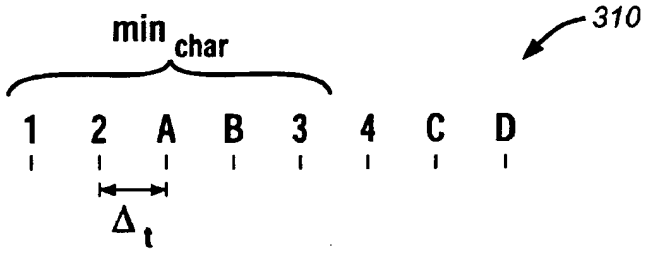


FIG. 3B

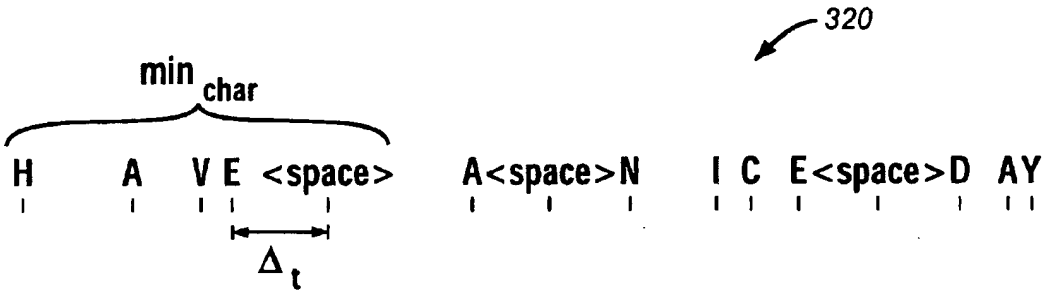


FIG. 3C

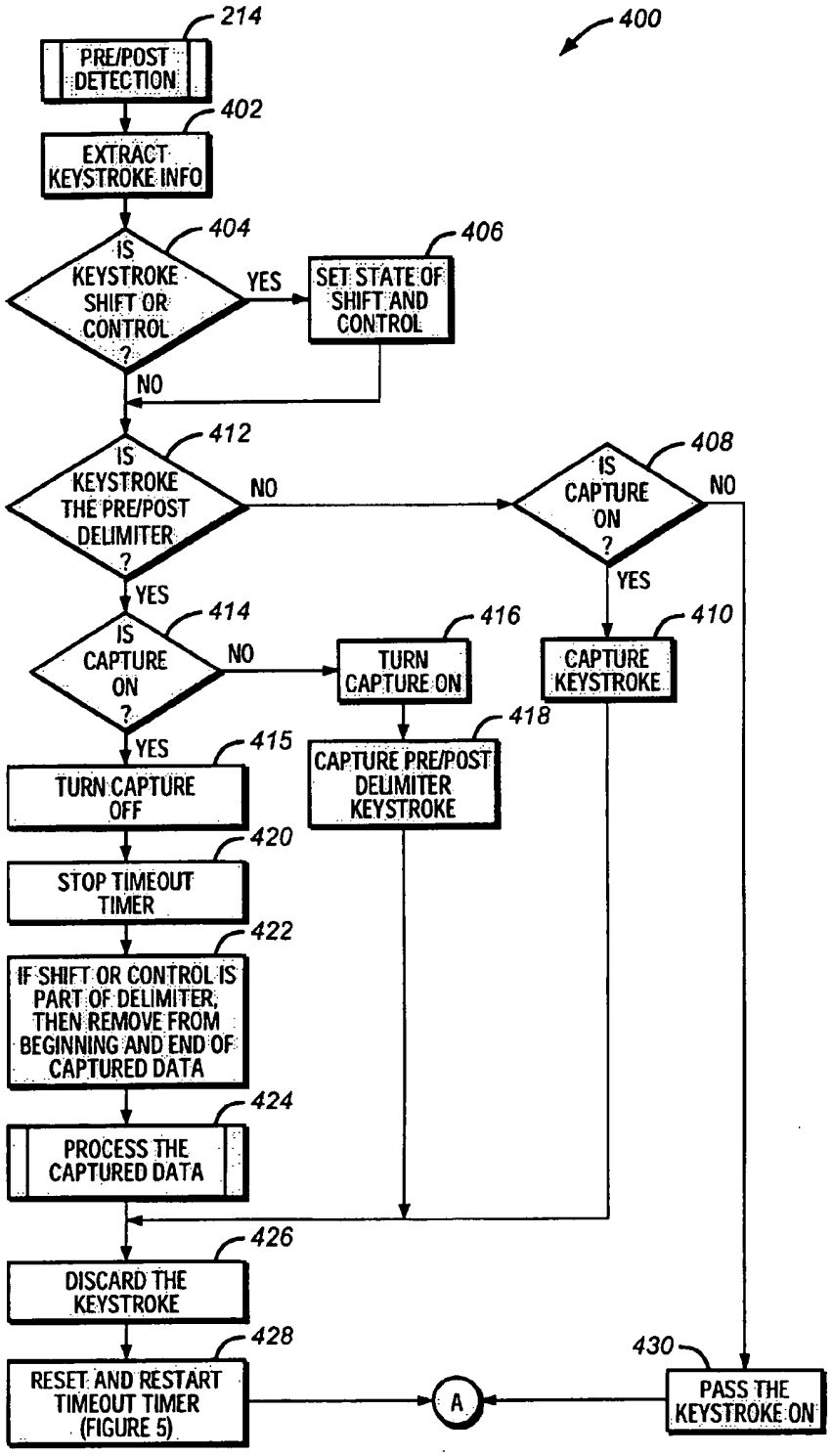

400
214
PRE/POST DETECTION
402
EXTRACT KEYSTROKE INFO
404
IS KEYSTROKE SHIFT OR CONTROL ?
YES
406
SET STATE OF SHIFT AND CONTROL
NO
412
IS KEYSTROKE THE PRE/POST DELIMITER ?
NO
408
IS CAPTURE ON ?
NO
YES
YES
414
IS CAPTURE ON ?
NO
416
TURN CAPTURE ON
410
CAPTURE KEYSTROKE
418
YES
415
TURN CAPTURE OFF
CAPTURE PRE/POST DELIMITER KEYSTROKE
420
STOP TIMEOUT TIMER
422
IF SHIFT OR CONTROL IS PART OF DELIMITER, THEN REMOVE FROM BEGINNING AND END OF CAPTURED DATA
424
PROCESS THE CAPTURED DATA
426
DISCARD THE KEYSTROKE
428
RESET AND RESTART TIMEOUT TIMER (FIGURE 5)
A
430
PASS THE KEYSTROKE ON

FIG. 4

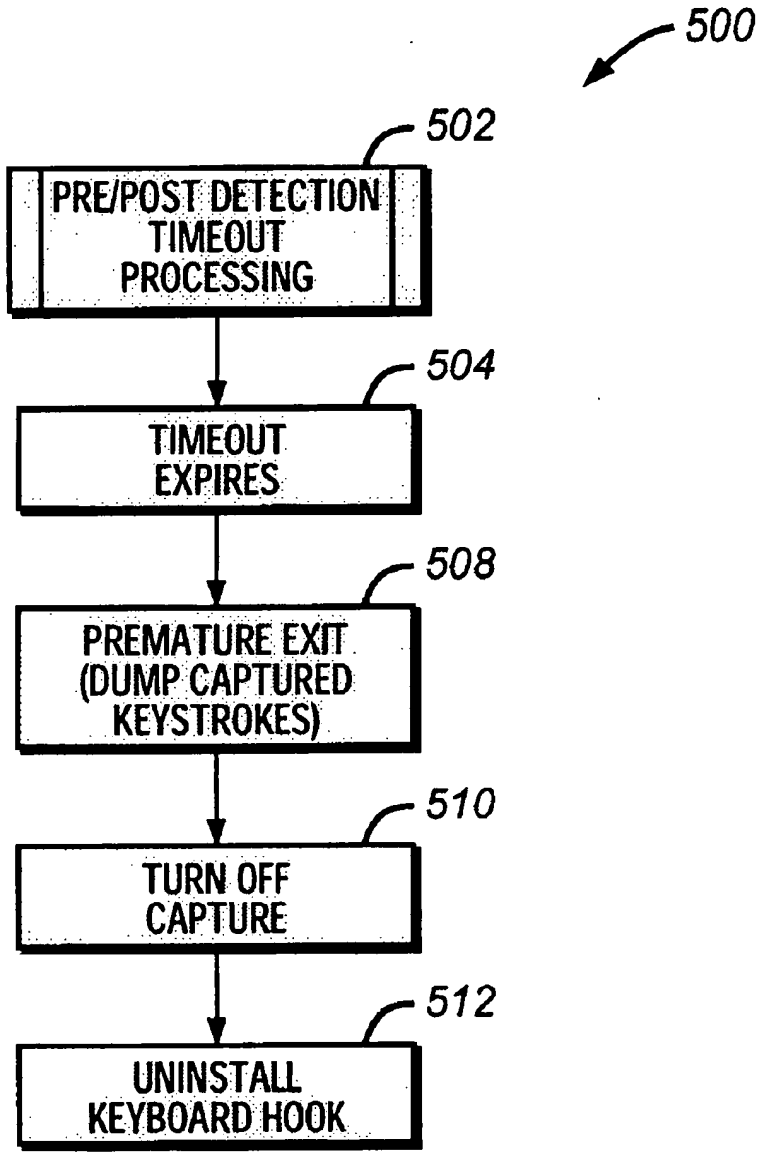

500
502
PRE/POST DETECTION TIMEOUT PROCESSING
504
TIMEOUT EXPIRES
508
PREMATURE EXIT (DUMP CAPTURED KEYSTROKES)
510
TURN OFF CAPTURE
512
UNINSTALL KEYBOARD HOOK

FIG. 5

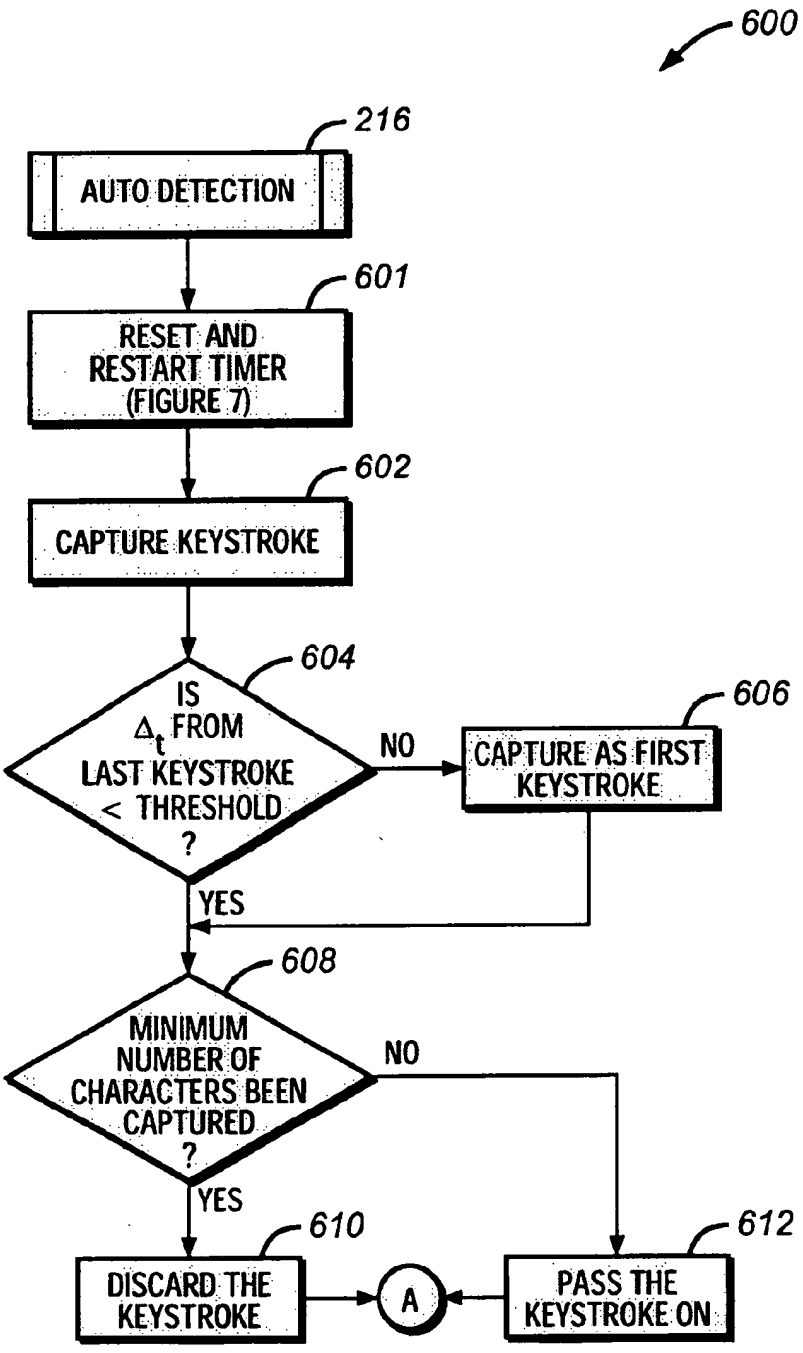

600
216
AUTO DETECTION
601
RESET AND RESTART TIMER (FIGURE 7)
602
CAPTURE KEYSTROKE
604
IS Δ_t FROM LAST KEYSTROKE < THRESHOLD ?
NO
606
CAPTURE AS FIRST KEYSTROKE
YES
608
MINIMUM NUMBER OF CHARACTERS BEEN CAPTURED ?
NO
YES
610
DISCARD THE KEYSTROKE
A
612
PASS THE KEYSTROKE ON

FIG. 6

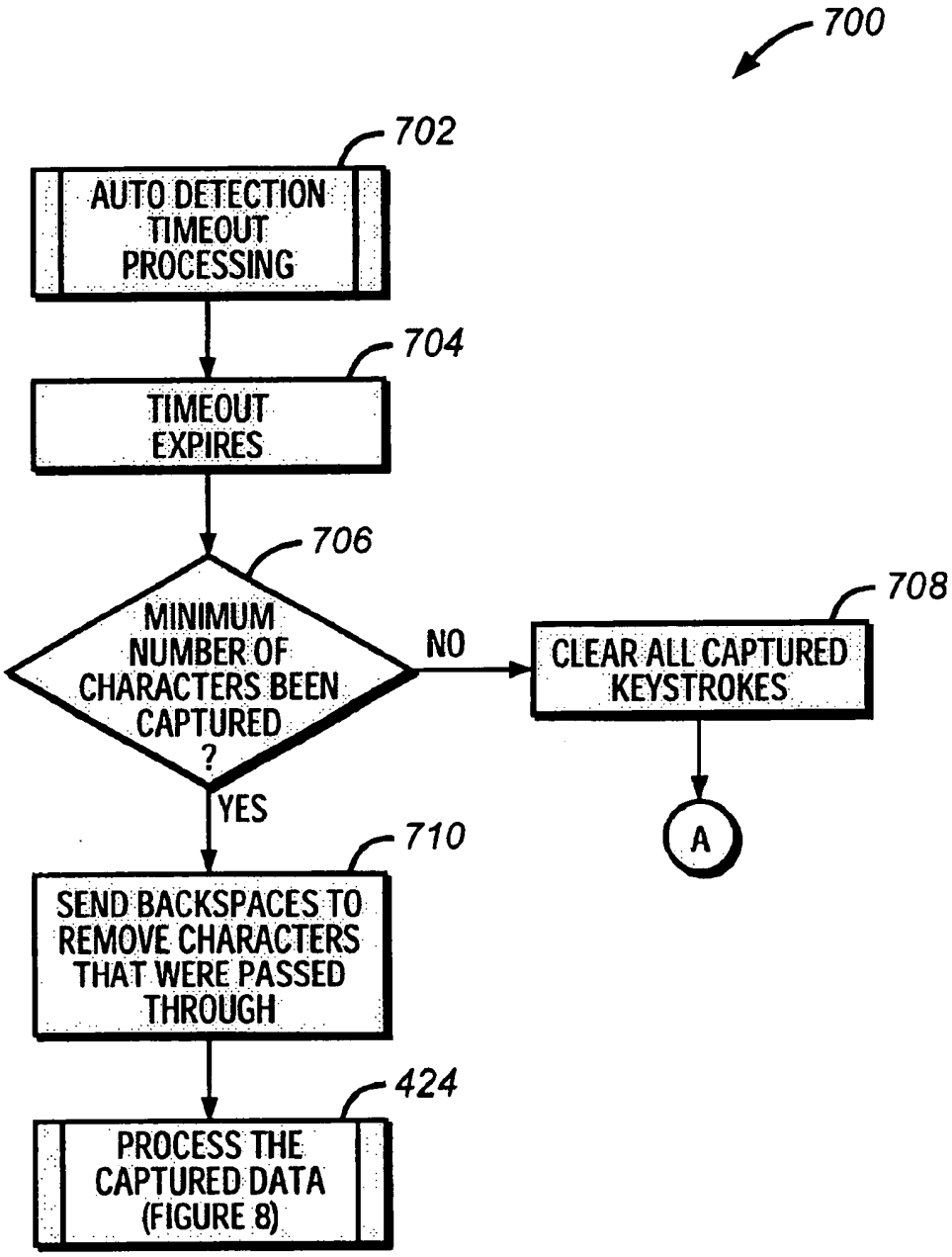

700
702
AUTO DETECTION TIMEOUT PROCESSING
704
TIMEOUT EXPIRES
706
MINIMUM NUMBER OF CHARACTERS BEEN CAPTURED ?
NO
708
CLEAR ALL CAPTURED KEYSTROKES
A
YES
710
SEND BACKSPACES TO REMOVE CHARACTERS THAT WERE PASSED THROUGH
424
PROCESS THE CAPTURED DATA (FIGURE 8)

FIG. 7

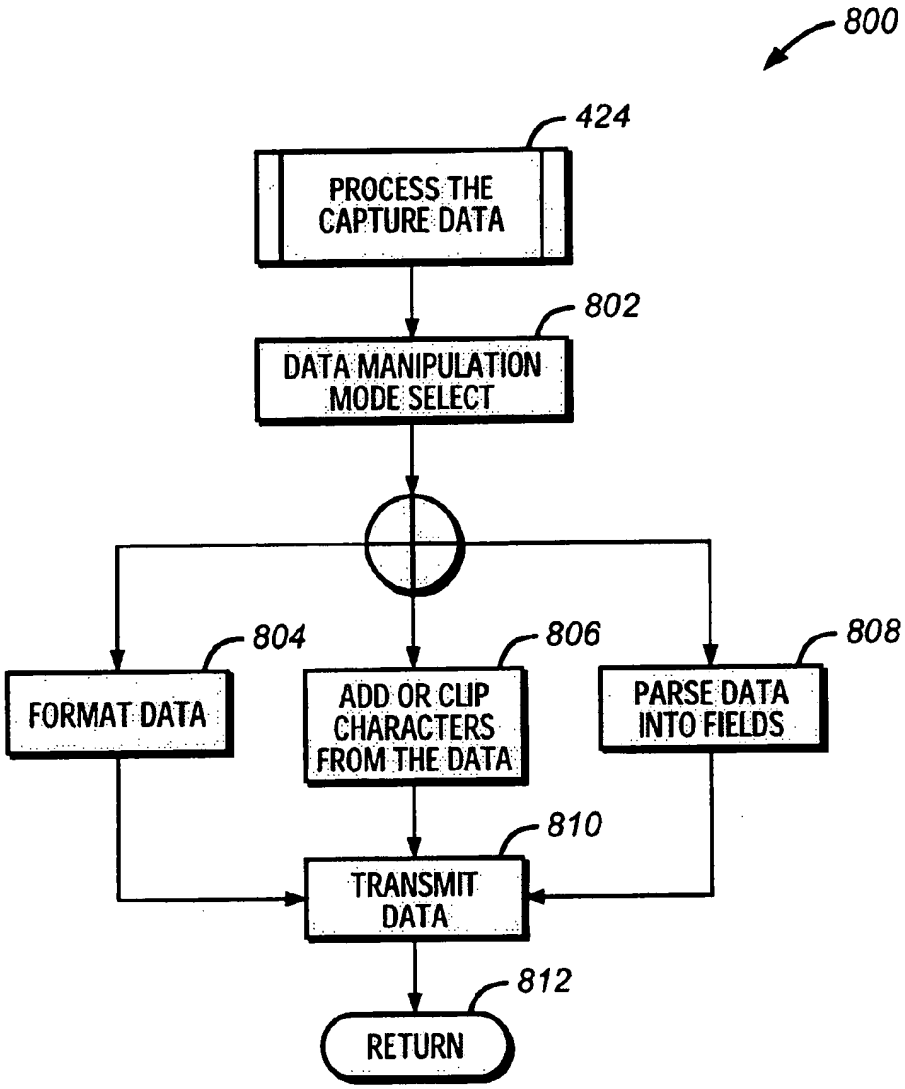

800
424
PROCESS THE CAPTURE DATA
802
DATA MANIPULATION MODE SELECT
804
FORMAT DATA
806
ADD OR CLIP CHARACTERS FROM THE DATA
808
PARSE DATA INTO FIELDS
810
TRANSMIT DATA
812
RETURN

FIG. 8

KEYBOARD WEDGE SYSTEM CONFIGURED FOR DATA PROCESSING OVER A KEYBOARD HOOK

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates generally to the field of keyboard wedge systems and processing of data streams, and more particularly to simplified configuration of barcode symbol scanning systems and processing of data streams therefrom.

2. Description of the Related Art

Barcode scanning systems have found an ever-increasing number of uses and applications. For example, barcoding has been utilized for inventory and warehousing applications, as well as with point of sale terminals. Many different types and complexities of barcodes systems have been used. A typical basic barcode symbol scanning system includes a barcode scanner, a decoder and a computer. The scanner and decoder have been utilized to retrieve information from barcodes for use by the computer system.

Conventional linear or one-dimensional barcodes have been in use since about 1970. The usefulness of such barcodes is limited by relatively small data capacity. To overcome this limitation, two-dimensional barcode symbologies have evolved. These symbologies are capable of encoding large amounts of data. For example, PDF417 barcode can encode up to 1800 ASCII characters or 2700 digits. However, in some applications only a portion of the scanned information is needed.

As part of a barcode reading system, a decoder is defined as an electronic package that receives a signal from the scanner, interprets the signal into meaningful data, and provides the data to other devices of the system. So far as known, there are three main types of decoders: wedge decoders, serial decoders and software decoders. Wedge decoders are systems that provide a decoding function for computer input. With keyboard wedge decoders, the data is decoded so that it appears as though it was manually typed or keyed directly into the computer. The basic function of keyboard wedge devices is conversion of scanned data into codes that are like those of keystrokes or keyboard data. Some keyboard wedge devices also have capability like that of software decoders to manipulate the scanned data, adding characters to the data stream or remapping the data stream altogether. However, to enable this data manipulation capability, the scanner must be manually pre-configured by scanning a multitude of special types of bar codes. This is a very complicated and time-consuming procedure.

Serial decoders are also external devices that connect into a communications or COM port of the personal computer. Typically, decoded scanners (i.e., scanners in which the decoder is integrated, usually into the handle of the scanner) are expensive.

Software wedges, located within the PC software, received the scanner data generally via the COM port. The received scanner data is then re-routed within the computer to the keyboard buffer. The data thus appears to other parts of the computer to have originated from the keyboard.

Many different types of scanning devices have been available. Scanning devices include wands, charge coupled device (CCD) scanners and laser scanners. Wand scanners tend to be the least expensive, followed by CCD scanners and laser scanners (the most expensive). Most scanning devices use a light emitting diode (LED) and a photo detector to scan barcodes. The light generated from the LED falls on the barcodes and is absorbed by the printed bars and reflected by the white spaces. The photodetector senses the reflected light and electro-optically converts the reflected light into a signal. The digitized signal is then sent to a decoder and converted into ASCII or other types of data characters.

Currently, there are more than 400 barcode symbologies in use. Each character in a barcode symbology is generally represented by a barcode in the form of a series of bars and spaces. Typically, each barcode symbol, as encoded, includes a quiet zone, start code or pattern, data characters, stop code and trailing quiet zone. Many symbologies support a check digit or digits to ensure data integrity. With such symbologies, the check digit or digits are usually located before the stop code. A barcode symbol is represented by a combination of barcode characters including the start/stop codes, quiet zones, data characters and check characters (as required by a particular symbology) that forms a complete, scannable entity.

SUMMARY OF THE INVENTION

Briefly a scanning system according to the preferred embodiment of the invention utilizes a decoded keyboard wedged device together with a keyboard hook device for system configuration and data manipulation. The keyboard wedge functions to accept data read from a barcode scanner and pass the data to a computer system as normal keyboard typed keystrokes. Thus, the keyboard wedge of the present invention converts data read by a scanner connected to a computer input into a format like that of data from the computer keyboard. The scanner data thus appears as though it were from the keyboard, allowing scanned data transmission over a standard keyboard line. The keyboard hook functions to intercept the data passed from the keyboard wedge to the computer. A processing application then can process the data passing through the keyboard hook. The processed data can then be sent to the computer for use in the desired application.

In operation, the scanning system of the present invention allows typed keystrokes from the keyboard to pass through the keyboard hook directly to the computer while the scanned data keystrokes are routed from the keyboard hook to the processing software. Thus, the keyboard hook provides a window to the keyboard data line, through which the processing software can distinguish typed from scanned keystrokes. Since only scanned data is processed, normal keyboard operation is not affected and system resources are conserved.

The processing software utilizes the keyboard hook to provide a number of data manipulation functions, including adding and clipping data characters, special formatting and parsing of data components. Furthermore, since the keyboard hook provides a path off of and onto the standard keyboard line, the processing software allows a user to selectively pass only those portions of data or formats thereof that are appropriate for a particular application. Further, because the processing is performed in software, the system can be easily configured to accept different scanned data decode formats without the need for different or additional system hardware.

In addition, the scanning system of the present invention provides an improved method of configuring the processing software. The processing software is configured to recognize what the scanned keystrokes look like. Scanned data is thus reliably detected and routed to the processing software while typed keystrokes are passed directly to the computer. Auto-

configuration is achieved by supplying expected characteristics of the scanned data to the software, including average time between keystrokes and a minimum number of keystrokes over which average time is maintained. These characteristics represent threshold values that are used to test incoming keystrokes. Simplified configuration may also be achieved using a preamble/postamble protocol. In this mode, the software inspects data passing through the keyboard hook for special known characters which precede and follow the scanned data packet. Using either of the configuration modes, the present invention thus overcomes the need for time-consuming and complex manual scanner configuration.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention can be obtained when the following detailed description of the preferred embodiment is considered in conjunction with the following drawings, in which:

FIG. **1** is a block diagram of an example computer system capable of performing scanned data processing and manipulation in accordance with the present invention;

FIG. **2** is a flowchart showing a process for processing scanned data over a computer keyboard line in the system of FIG. **1**;

FIGS. **3**A–**3**C are illustrations showing formats for typical data inputs;

FIG. **4** is a flowchart illustration providing further details of the Pre/Post detection mode of the process of FIG. **2**;

FIG. **5** is a flowchart illustration of timeout processing in the Pre/Post detection mode;

FIG. **6** is a flowchart illustration providing further details of an Auto detection mode of the process of FIG. **2**;

FIG. **7** is a flowchart illustration of timeout processing in the Auto detection mode; and

FIG. **8** is a flowchart illustration of processing of scanned data in accordance with the present invention.

DETAILED DESCRIPTION OF INVENTION

Referring now to FIG. **1**, a block diagram of an exemplary barcode scanning system B in accordance with the present invention is shown. Although a barcode scanning system is shown by way of example, the present invention can be used with other devices capable of generating data streams. The barcode scanning system B employs a keyboard wedge **106** that receives both scanned data from a barcode scanner **108** and typed data from a conventional computer keyboard **110**. The keyboard wedge **106** is physically introduced or inserted via software between the system keyboard **110** and the computer console **100**.

The computer **100** may be any of several types of conventional personal computers which are commercially available. In the preferred embodiment, the computer **100** preferably operates under a Windows™ operating system available from Microsoft Corporation, although other operating systems may be used.

The wedge **106** functions to convert scanned data into keystrokes such that the computer **100** is enabled to accept the scanned data as data in a form compatible with that of the keyboard. Therefore, the keyboard wedge **106** is transparent to the computer **100**. The keyboard wedge **106**, can further be implemented in the form of a hardware wedge or a software wedge.

In a system using a hardware wedge the keyboard **110** and the scanner **108** are physically plugged directly into the electronic gating circuitry of the keyboard wedge **110** which is then plugged into the keyboard port of the computer. A software wedge accomplishes the same result as a hardware wedge but using program codes rather than gating circuitry. Using a scanner having an RS232 interface plugged into a peripheral device communication inputs of the computer or PC, such as the COM port, the software wedge takes the scanner data via the COM port, and re-routes it within the computer or PC to the keyboard buffer. The computer thus treats the scanned data as if it was typed on the keyboard.

The keyboard wedge **106** passes typed keystrokes directly to the PC while scanned data from a scanner **108** is first converted into keystrokes and then passed onto the keyboard line. Thus, typed data on a keyboard is sent to the computer as usual. When a barcode, or other symbology, **112** is scanned, the barcoded characters are converted to keyboard "key codes" by the keyboard wedge and then sent along the keyboard line. Thus, scanned data from the scanner **108** is converted by the keyboard wedge **106** into keystrokes such that the scanned data is in the same format as typed data.

The barcode scanning system B of FIG. **1** includes a keyboard hook **104** coupled to a configuration and data processing filter function **102**. The keyboard hook **104** is provided in the Windows™ operating system. The keyboard hook **104** intercepts events such as keystrokes designated by the user before they reach the application software. In the present invention, as described below, keystroke and scanned data are differentiated by various characteristics in both the keyboard hook **104** and the configuration and data processing filter function **102**. If the data are indicated as data from the scanner **108**, the configuration and data processing filter function **102** is given a path through which data may be rerouted prior to reaching the computer **100**. If the data are typed keystrokes, the data are passed to the computer without additional processing. The keyboard hook **104** and the configuration and data processing filter function **102** operate together to intercept all scanned data to be preprocessed while directly passing typed keystrokes from keyboard **100** directly on to the computer **100** without preprocessing.

The configuration data processing filter function **102** is capable of detecting data streams converted from scanned data as distinct from keystrokes from typed data. Thus, through software, the barcode scanning system B is able to automatically detect scanned data on a keyboard line from typed data on the same keyboard line and then process this scanned data into the format desired for the application in use. The data processing provides selective processing and manipulation of data streams from the barcode scanner and other standard and high capacity symbol scanners. For example, as described in greater detail in reference to FIG. **8**, special formatting of data, adding and removing data characters and parsing the data stream into fields may be perform to alter the scanned data into a format required by a specific application. This processed data then is sent back through the keyboard hock to the computer **100**, where it is treated as normal typed data from a keyboard **110**.

Referring to FIG. **2**, a flowchart showing the setup function for the barcode scanning system B according to the present invention as shown. The setup function is called at step **202**. The function commences in step **204** when the user activates the software. This activation can be done either manually by the user or automatically when the user inputs data via either the scanner **108** or the keyboard **110**. Next in step **206**, the system installs a keyboard hook available from the operating system. As mentioned, the keyboard hook **104** intercepts incoming data before it goes to the active application in the computer **100**.

The Windows™ operating system of computer **100** allows software to set a hook into the keystroke processing chain by means of the keyboard hook. As is known in the art using keyboard hooks, the hook can be either a system-wide hook or a thread specific hook where it intercepts keystrokes from all windows or from a specific window, respectively. After the hook is installed in step **206**, the setup process then waits for a keystroke at step **208** until an input keystroke is detected in step **210**.

At this point, a detected keystroke can be either typed data from the keyboard **110** or scanned data from the scanner **108**. Because the keyboard wedge **106** converts the scanned data into keystrokes, the data stream entering the keyboard hook **104** is classified through use of the configuration and data processing filter function **102** as either scanned or typed data. In other words, the data stream to computer **100** from the keyboard wedge **106** is comprised of characters from the same character map, regardless of whether it is scanned data or typed data.

The setup process of FIG. **2** then determines which user defined detection mode has been selected. At step **212**, the system determines whether the Pre/Post method has been detected. If so, the set up routines calls the Pre/Post detection routine **214** (FIGS. **4** and **5**). If not, the setup function **200** calls an auto detection mode at step **216** (FIGS. **6** and **7**).

FIGS. **3A–3C** illustrate typical data stream fragments of the data exiting the keyboard wedge **106** on the keyboard line, representing either typed data or converted scanned data. Although the scanned data illustrated in FIGS. **3A** and **3B** are shown by way of example to originate from one-dimensional barcodes, the present invention can also be used with two-dimensional barcoding and other symbologies as well.

Because the typed data and the scanned data characters are based on the same character map, their differences are not altogether apparent. The configuration and data processing filter function **102** directs itself to various characteristics which identify converted scanned data. FIG. **3A** illustrates scanned data streams **306** and **308** having a preamble and postamble character **302** and **304**, respectively, attached to the beginning and end, respectively, of the data stream. In this configuration, the keyboard wedge **106** or the scanner **108** itself independently attaches the preamble **302** and postamble delimiters **304** to the data streams **306** and **308**. In this way, the Pre/Post detection mode **214** detects scanned data by looking for a preamble delimiter **302**. After the preamble delimiter **302** is detected, the characters which follow comprise the data stream of scanned data until a postamble delimiter **304** is detected. In this mode, accuracy depends on the selection of the preamble and postamble delimiters **302** and **304**. These delimiters are preferably selected as characters which are rarely if ever used as typed data.

The barcode scanning system B is also capable of detecting scanned data without the use of preamble and postamble delimiters. FIG. **3B** shows a typical data stream **310** of converted scanned data from scanner **108**, the converted data stream representing the barcode **112**, or other symbology. It is important to notice that characters making up the data stream **310** from a scanning device **108** exhibits a consistent time interval, or period Δ_p, between which the individual characters are transmitted. Further, this period, Δ_p is maintained over a user defined minimum number of characters, min_{char}. Typed data, however, does not exhibit such a consistent pattern. As shown in FIG. **3C**, the characters of the typed data stream **320** are transmitted having largely varying time spacing periods between which adjacent characters are transmitted. Specifically, unlike the scanned data stream **310**, the typed data stream **320** does not maintain the consistent period, Δ_p, over a user defined minimum number of characters, min_{char} that is present in data from the scanning device.

Therefore, depending on the mode selected, the configuration and data processing filter function **102** intercepts scanned data that matches the user defined scanned data characteristics. If the Pre/Post detection mode **214** is selected, the system detects the user defined preamble and postamble delimiters to recognize the beginning and end, respectively, of a scanned data stream. If a preamble delimiter is not detected, the data on the keyboard data line is not scanned data and is passed without processing directly to the computer **100**.

Alternatively, when the Auto Detection mode **216** is selected, the system uses user-defined values that are typical characteristics exhibited by scanned data distinguished from typed keystrokes. For example, in the preferred embodiment, the Auto Detection mode **216** intercepts data when a data stream exhibits a consistent predefined transmission frequency, or a time period, Δ_t, between the transmission of contiguous characters, that is maintained over a predefined number of characters. If the frequency of the data stream is erratic or is consistent over less than the predefined number of characters, the data is passed without processing directly to the computer **100**. Although the time period, Δ_t, and the value representing the minimum number of characters over which time Δ_t be maintained is shown by example, the present invention can also utilize other characteristics that uniquely define scanned data to distinguish scanned data from typed data.

Referring now to FIG. **4**, a flowchart is provided detailing the Pre/Post detection mode of step **214** of FIG. **2**. After a call to the Pre/Post detection routine **214**, the function commences at step **402** where the keystroke information is extracted, such as the scan code, the current press state, the old state, etc. The detection process continues in step **404** where it is determined if the keystroke is a SHIFT or a CONTROL. If so, the state of the SHIFT and CONTROL setting is set. It is next determined at state **412** whether the keystroke is the assigned Preamble or Postamble delimiter **302** or **304**. If the keystroke is the assigned pre or post delimiter, it is determined at step **414** whether the capture setting is activated. If capture is not activated, then the capture setting is activated at step **416**. The Pre- or Post-delimiter keystroke is then captured at step **418**.

Therefore, a scanned data stream **300** is detected through the keyboard hook **104** when the configuration data processing filter function **102** first detects the assigned preamble delimiter **302** in step **412**. Because this is the preamble delimiter, the capture setting has not been activated prior to its detection. By activating the capture setting at **416**, the characters following the preamble delimiter **302** are captured in step **418**. At step **426**, after storing the preamble delimiter in step **418** as a captured keystroke, the system then discards that keystroke thus preventing it from passing to the computer **100**. The detection process then, at step **428**, resets and restarts the timeout timer and then loops back to state **208** and **210** where it waits for the detection of the next keystroke.

Upon detection of a next character following the preamble character **302**, at step **412**, it is again determined whether this keystroke is the preamble or postamble delimiter. In a valid data stream, the next character is not either a preamble

or postamble delimiter, instead the next character is characters within the data stream **306** or **308**. Therefore, at step **408**, the capture having been activated from step **416**, the next character is captured at step **410**. After the keystroke is captured, the system then at step **426** discards that keystroke to prevent a keystroke from passing through computer **100**. It is to be noted however, the keystroke at this point has been stored as captured data. The foregoing described process of FIG. **4** repeats itself, capturing subsequent characters until a postamble delimiter **304** signals the end of the scanned data stream.

After a preamble delimiter has been detected in step **412** and after subsequent keystrokes of the data stream **306** or **308** have been captured in step **410**, a postamble delimiter is then detected at step **412**. The postamble delimiter **304** tells the system that the data stream is now complete. Since the capture setting was turned on to capture the preamble delimiter keystroke at step **418** and the subsequent data stream keystrokes at **410**, the process proceeds to step **415** where the capture setting is deactivated. The timeout timer is then stopped at step **420** and a SHIFT or a CONTROL is removed from the beginning and end of the captured data if either were part of the delimiter at step **422**. At this point the stored captured data, now representing a complete data stream **306** or **308**, is processed at step **424**. Thus, the Pre/Post process detects and captures the scanned data while passing keystrokes typed from a keyboard. This captured data is then processed at step **424** according to the particular application for which the scanned data is intended.

Each time a character is captured, it is discarded at step **426**, preventing it from passing to the computer **100**. In this way, only the scanned data that has been captured and later processed, discussed in detail with reference to FIG. **8**, is sent to the computer. However, as discussed, all typed data is passed directly to the computer **100** without being routed to the processing function **424**. Therefore, in the Pre/Post detection mode, only typed keystrokes and captured and processed data streams are passed to the computer **100**. At step **428** the timeout timer is reset and restarted while the process waits for an additional keystroke at step **208**.

Alternatively, when a preamble delimiter **302** has not been detected, capture is not activated. Instead, the system passes the keystroke from keyboard **110** on to the computer **100** at step **430** and returns to step **208** where it again waits for the next keystroke. This path is taken for normally typed keystrokes from keyboard **110**.

Referring now to FIG. **5**, a flowchart is provided detailing the timeout processing during Pre/Post detection mode. After a keystroke is captured, a timer is set at step **428** (FIG. **4**). The timer protects against inadvertent use of the preamble and postamble character when typing. The Pre/Post detection mode timeout processing is called at step **502**. The processing commences when a timeout expires at step **504**. The software then performs a premature exit at step **508**, in which the captured keystrokes are dumped and are not passed to the computer **100**. The capture setting is then deactivated at step **510** and the software uninstalls the keyboard hook at step **512**.

Referring now to FIG. **6**, the Auto Detection mode **216** of FIG. **2** is shown in greater detail. Step **216** commences by resetting and restarting the timer. At step **602**, the keystroke is captured. It is then determined at step **604** whether the time period Δ_t (shown in FIGS. **3B** and **3C**) from the last received keystroke is less than the predefined Δ threshold. If Δ_t from the last keystroke is greater then the predefined Δ threshold, then the previously captured keystrokes from step **602** are discarded and the current keystroke becomes the first captured character at step **606**. Alternatively, if the period Δ_t from the last received keystroke is less than the predefined Δ threshold, the previously captured keystrokes and the current captured keystroke of step **602** remain unmodified.

Then, at step **612**, if the minimum number of characters, $\min_{char}$ (FIGS. **3B** and **3C**) have not been captured at step **608**, the Auto Detection process **600** passes the keystroke on to the active application and then waits for the next keystroke at step **208**. However, if the minimum number of characters, $\min_{char}$, have been previously captured, the auto detection process of FIG. **5** discards this keystroke, thus prevents it from passing to the computer **100**, while continuing to store the captured keystrokes. The system then waits for an additional keystroke at step **208**. Therefore, by selecting the value of $\min_{chrs}$ and Δ threshold at appropriate settings depending on data context and usage experience, scanned data with the present invention can be distinguished from typed data for the computer.

As discussed with reference to FIGS. **3B** and **3C**, scanned data exhibits a more consistent pattern of timing between the transmission of each character than that of typed data. By setting the Δ threshold to closely approximate the actual period, Δ_p, of the scanner output, the data streams from the scanner **108** can be identified. Since it is possible that over a small number of characters, typed data may exhibit a similar period Δ_t between each keystroke, the value of $\min_{char}$ is included to specify the number of characters over which Δ_t is tested. The larger the value of $\min_{chars}$, the more unlikely that typed data will exhibit a consistent Δ_t that is close to the redefined Δ threshold for scanner data.

Referring to FIG. **7**, the timeout processing for the auto detection mode **216** is shown in more detail. Timeout processing commences after a timeout expires at step **704**. This occurs when the system encounters a "quiet time," during which no activity is present on the data line. Specifically, the "quiet time" is the period of time after a scan is complete when there is no keystroke activity either from the keyboard or from the scanner. When this "quiet time" duration is complete, the Timeout expires and processing begins. The length of the "quiet time" is some multiple of the Δ threshold time.

Processing continues at step **706** where it is determined whether the minimum number of characters, $\min_{char}$, have been captured by the auto detection step of **216**. If $\min_{chars}$ has not been met, all captured keystrokes are then cleared at step **708** and the configuration and data processing filter function **102** continues to wait for additional keystrokes at step **208**. On the other hand, if $\min_{char}$ has been met, backspaces are sent to the active application in step **710** to remove the characters that were passed to the computer **100** in step **612**. The number of backspaces sent is equal to the value of $\min_{chars}$. Therefore the Timeout processing **702** detects and captures the data as scanned data when a specified number of characters, $\min_{char}$, are received. If not, the data is interpreted as keystroke data from the keyboard. The captured scanned data is then processed at step **424**. Thus, the Auto Detection process detects and captures the scanned data while passing keystrokes typed from a keyboard. This captured data is then processed at step **424** according to the particular application for which the scanned data is intended.

Referring now to FIG. **8**, the processing step **424** of FIGS. **4** and **7** is shown in more detail. An exemplary processing step **424** commences following selection of the appropriate

data manipulation mode at step **802**. According to an exemplary embodiment according to the invention, any number of data manipulation modes can be implemented. For example in step **804**, captured data may be converted into a specific format. For example, a continuous stream of number characters may be formatted into a telephone number format by adding parenthesis around the first three numbers and inserting a dash after the sixth character. Further, processing may add or clip characters from the beginning and end of the data stream at step **806**. In addition, in step **808**, portions of a data stream may be parsed into separate data fields. After the selected data manipulation has been completed, the processed data is then transmitted to the computer **100** through the keyboard hook **104** at step **810**. The process then returns at step **812** to the function that called the processing **424**.

Therefore, it can be seen that the scanning system according to the preferred embodiment of the present invention utilizes a decoded keyboard wedge device together with a keyboard hook device for system configuration and data manipulation. The keyboard wedge device allows the scanner device to be connected directly to a computer and transmit data as keystrokes over a standard input line to a computer. The keyboard hook then allows the configuration and data processing function filter to intercept data streams originating from scanned data, while passing typed keystrokes directly to the computer. Because this is implemented in software, a greater range of data manipulation capabilities is provided. In this way, the system is not limited to a specific hardware device configuration, as new software can be added if a new kind of data manipulation is required.

In addition, configuration according to an embodiment of the present invention easily and automatically detects scanned data and distinguishes data streams originating from a scanner from data streams from typed keystrokes. The automatic configuration overcomes the need for traditional manual prescanning of special barcodes. Finally, the data processing of the scanned data provided by the keyboard wedge **106** and the keyboard hook **104** in tandem provides selective processing and manipulation of data streams scanned from high capacity barcode symbologies.

Finally, although a barcode scanning system is shown by way of example, the present invention can be used with other devices capable of generating data streams.

The foregoing disclosure and description of the invention are illustrative and explanatory thereof, and various changes in the number of variables, number of parameters, order of steps, data types, code elements, connections, components, and materials, as well as in the details and types of the illustrated hardware and software and construction and method of operation may be made without departing from the spirit of the invention.

What is claimed is:

1. A method for transferring data to a computer over a computer data line, the data generated by either a keyboard or an external device, comprising the steps:

receiving data from the keyboard and the external device at a same input, data from the external device matching a format of data from the keyboard;

detecting whether the data is from the keyboard or the external device;

passing the data from the computer data line to a keyboard processing it in the computer when the detected data is from the keyboard; and

intercepting the data when the detected data is from the external device the intercepting step comprising the steps of:

constructing an external device data configuration representing the data from the external device, using characteristics of a data stream that are typical for the external device;

detecting data on the computer data line according to the external device data configuration;

intercepting the data on computer data line that matches the external device data configuration; and

passing the intercepted data to an external device processing unit in the computer.

2. The method of claim **1**, wherein the step of passing further comprises:

passing the data directly to the computer without processing the data when the detected data is from the keyboard.

3. The method of claim **1**, further comprising:

processing the intercepted data.

4. The method of claim **1**, wherein the characteristics that are typical for the data from the external device include:

a time for period between each transmitted character of the data; and

a minimum number of characters over which the time period is maintained.

5. The method of claim **1**, wherein the characteristics that are typical for the data from the external device include:

at least one delimiting character that represents the beginning of a data packet; and

at least one delimiting character that represents the end of the data packet.

6. The method of claim **1**, further comprising the steps:

manipulating the intercepted data; and

sending the manipulated data on the computer data line to the computer.

7. The method of claim **1**, wherein the external device is a barcode scanner.

8. The method of claim **1**, wherein the computer data line is a standard keyboard data line.

9. A method of detecting data from an external device on a computer data line, the computer data line transmitting data from both a keyboard device and the external device, the method comprising:

constructing an external device data configuration representing the data from the external device;

detecting data on the computer data line according to the external device data configuration, data from the external device matching a format of data from the keyboard; and

intercepting the data on the computer data line using a keyboard hook when the data matches the external device data configuration.

10. The method of claim **9**, wherein the step of constructing is performed using characteristics of a data stream that are typical for the data from the external device.

11. The method of claim **10**, wherein the characteristics that are typical for the data include:

a time period between each transmitted character of the data; and

a minimum number of characters over which the time period is sustained.

12. The method of claim **10**, wherein the characteristics for the data include:

at least one delimiting character that represents the beginning of a data packet; and

at least one delimiting character that represents the end of a data packet.

13. The method of claim 9, further comprising the steps:

manipulating the data; and

sending the manipulated data on the computer data line to a computer.

14. The method of claim 9, wherein the external device is a barcode scanner.

15. The method of claim 9, wherein the computer data line is a standard keyboard data line.

16. A computer system for transferring data from an external device over a keyboard data line in a format matching the format of computer data generated by a keyboard for the computer, the system comprising:

an external device for generating a data stream;

a host computer system, comprising:

a processor;

a keyboard;

a processor readable storage medium coupled to the processor;

a keyboard data line coupled to the processor for transmitting data to the processor;

a receiver for receiving a data stream generated by the keyboard and the external device at a same input, data from the external device matching a format of data from the keyboard;

a detector for detecting whether the data is from the keyboard or from the external device; and

software code in the processor readable storage medium executed by the processor to perform the steps of:

passing the data to the host computer system when the detected data is from the keyboard; and

intercepting the data when the detected data is from the external device, the intercepting step comprising the steps of:

constructing an external device data configuration representing the data from the external device, using characteristics of a data stream that are typical for the external device;

detecting data on the computer data line according to the external device data configuration;

intercepting the data on computer data line that matches the external device data configuration; and

passing the intercepted data to an external device processing unit in the computer.

17. The computer system of claim 11, wherein the step of passing further comprises:

passing the data directly to the computer without processing the data when the detected data is from the keyboard.

18. The computer system of claim 16, wherein the software code further comprises code for directing the host computer system to perform the further step of:

processing the intercepted data into a format required by an application when the detected data is from the external device.

19. The computer system of 16, wherein the characteristics that are typical for the data include:

a time period between each transmitted character of the converted data; and

a minimum number of characters over which the time period is maintained.

20. The computer system of claim 16, wherein the characteristics that are typical for the data include:

at least one delimiting character that represents the beginning of a data packet; and

at least one delimiting character that represents the end of a data packet.

21. The computer system of claim 16, wherein the external device is a barcode scanner.

22. A data detection and processing system for sending data generated by an external device to a computer system over a computer keyboard data line in a format matching the format of data generated by a keyboard for the computer system, the data detection and processing system comprising:

an external device for generating a data stream;

a readable storage medium;

a receiver for receiving a data stream generated by the keyboard and the external device at a same input, data from the external device matching a format of data from the keyboard;

a detector for detecting whether the data is from the keyboard or from the external device; and

software code in the readable storage medium to perform the steps of:

passing the data to the computer system when the detected data is from the keyboard; and

intercepting the data when the detected data is from the external device, the intercepting step comprising the steps of:

constructing an external device data configuration representing the data from the external device, using characteristics of a data stream that are typical for the external device;

detecting data on the computer data line according to the external device data configuration;

intercepting the data on computer data line that matches the external device data configuration; and

passing the intercepted data to an external device processing unit in the computer.

23. The data detection and processing system of claim 22, wherein the step of passing further comprises:

passing the data directly to the computer system without processing the data when the detected data is from the keyboard.

24. The data detection and processing system of claim 22, wherein the processor readable storage medium further comprises:

software code for directing the host data detection and processing system to perform the step of:

processing the intercepted data into a format required by an application when the detected data is from the external device.

25. The data detection and processing system of claim 22, wherein the characteristics that are typical for the data from the external device include:

a time period between each transmitted character of the converted data; and

a minimum number of characters over which the time period is maintained.

26. The data detection and processing system of claim 22, wherein the characteristics that are typical for the data from the external device include:

at least one delimiting character that represents the beginning of a data packet; and

at least one delimiting character that represents the end of a data packet.

27. The data detection and processing system of claim 22, wherein the external device is a barcode scanner.

28. The method of claim 1, wherein the intercepting step is accomplished through the use of a keyboard hook.

29. The computer system of claim 16, wherein the intercepting step is accomplished through the use of a keyboard hook.

30. The data detection and processing system of claim 22, wherein the intercepting step is accomplished through the use of a keyboard hook.

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(12) **United States Patent**
Philyaw et al.

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(45) **Date of Patent: Sep. 2, 2003**

(54) **METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF DAT MEDIA**

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(52) **U.S. Cl.** **709/229**; 709/217; 709/238
(58) **Field of Search** 709/200, 201, 709/203, 217, 218, 219, 220, 223, 224, 227, 228, 231, 238, 245, 229

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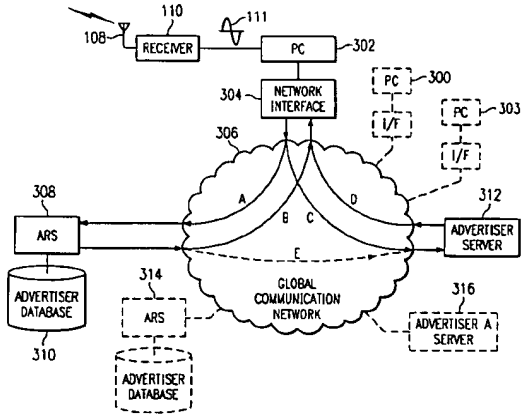
(57) **ABSTRACT**

A method for allowing a user PC to be controlled in order to effect a connection between the user PC and a destination node on a network. This is facilitated through an audio source wherein a digital audio tape recording media having embedded therein an audio signal therein. When the recording media is played, the audio signal is extracted by an audio extractor and transmitted to the user PC, and detected by a program running in the background of the user PC. Once the audible tone is detected, a web browser is launched and the tone or decoded product identifier information associated with the tone is transmitted to an ARS on the network. The ARS then compares the information received from the user PC using information from a relational database. The relational database contains routing information for various destination nodes on the network. When a match occurs, the matching information is then forwarded back to the user PC and this is utilized to route the user PC to the particular destination node corresponding to the audible tone for the processing of information received therefrom.

9 Claims, 8 Drawing Sheets



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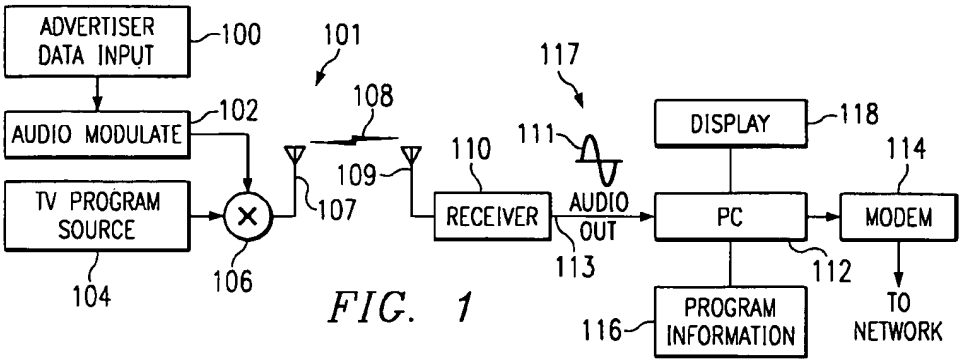


FIG. 1

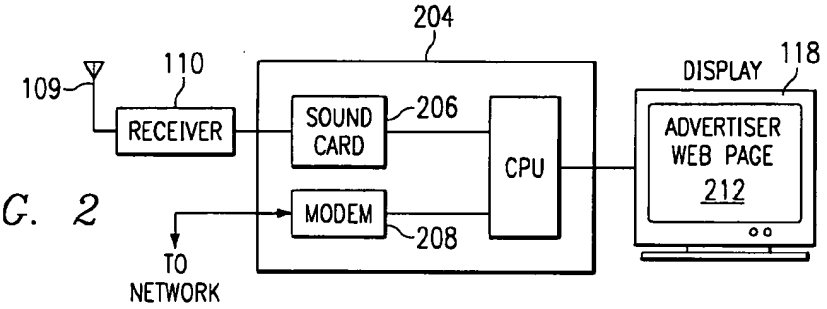


FIG. 2

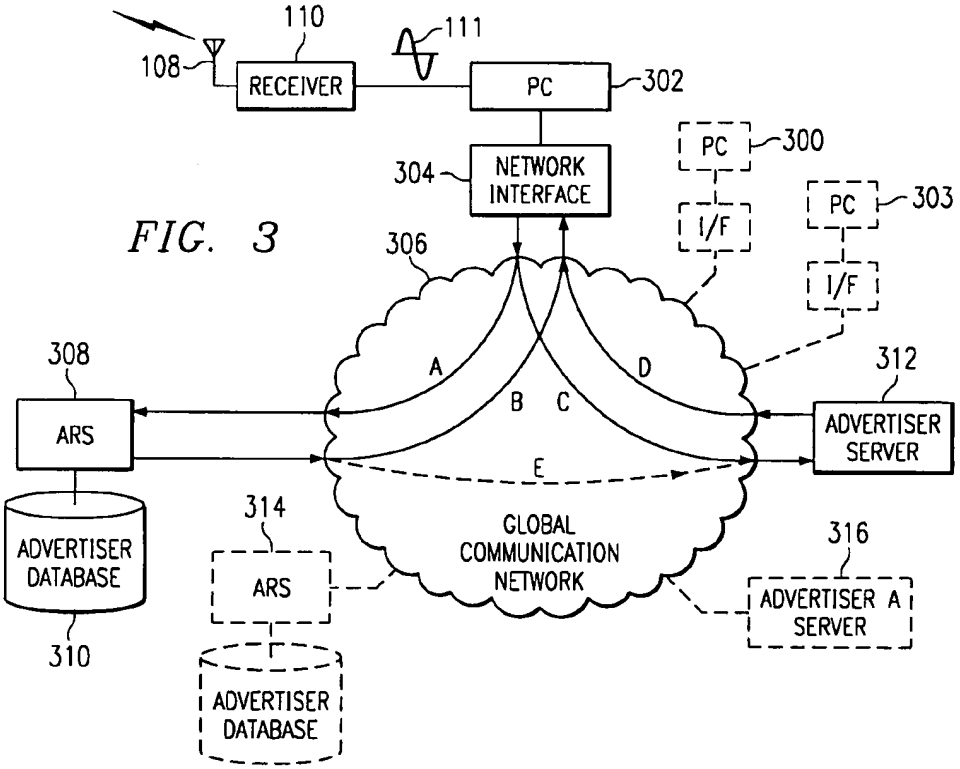


FIG. 3

PATH A: SOURCE TO ARS

FIG. 4a

PATH B: ARS TO SOURCE

FIG. 4b

PATH C: SOURCE TO ADVERTISER

FIG. 4c

PATH D: ADVERTISER TO SOURCE

FIG. 4d

PATH E: ARS TO ADVERTISER (OPTIONAL)

FIG. 4e

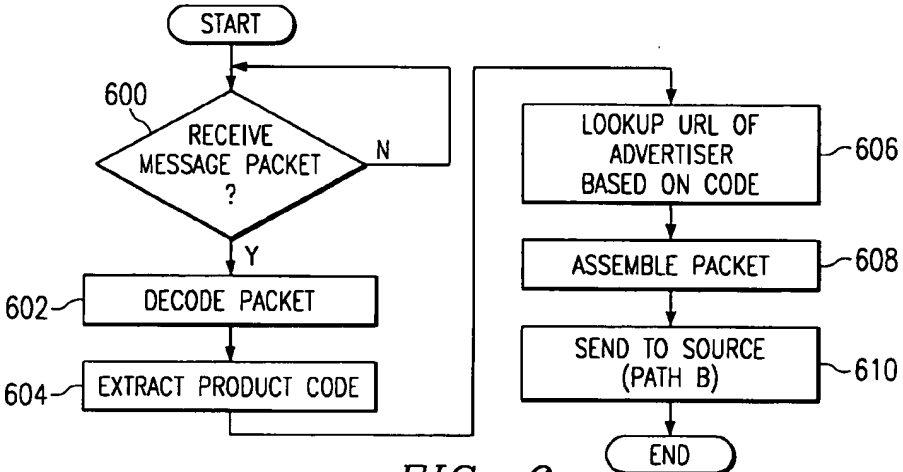


FIG. 6

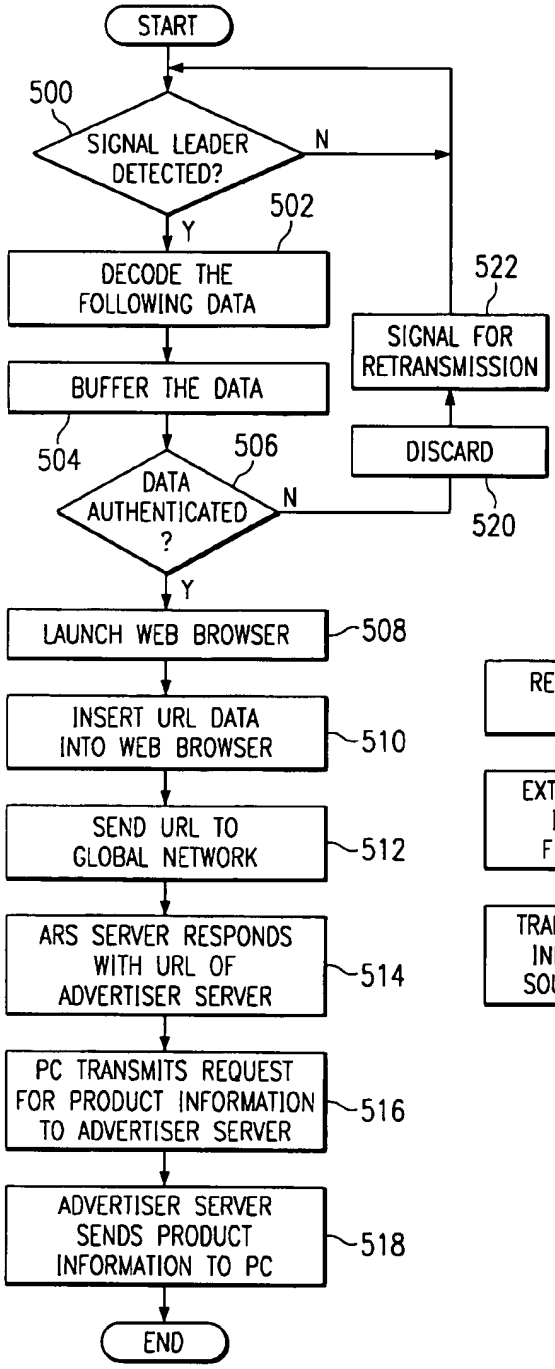

START
500
SIGNAL LEADER DETECTED?
N
Y
502
DECODE THE FOLLOWING DATA
BUFFER THE DATA
504
506
DATA AUTHENTICATED ?
N
Y
522
SIGNAL FOR RETRANSMISSION
DISCARD
520
LAUNCH WEB BROWSER
508
INSERT URL DATA INTO WEB BROWSER
510
SEND URL TO GLOBAL NETWORK
512
ARS SERVER RESPONDS WITH URL OF ADVERTISER SERVER
514
PC TRANSMITS REQUEST FOR PRODUCT INFORMATION TO ADVERTISER SERVER
516
ADVERTISER SERVER SENDS PRODUCT INFORMATION TO PC
518
END

FIG. 5

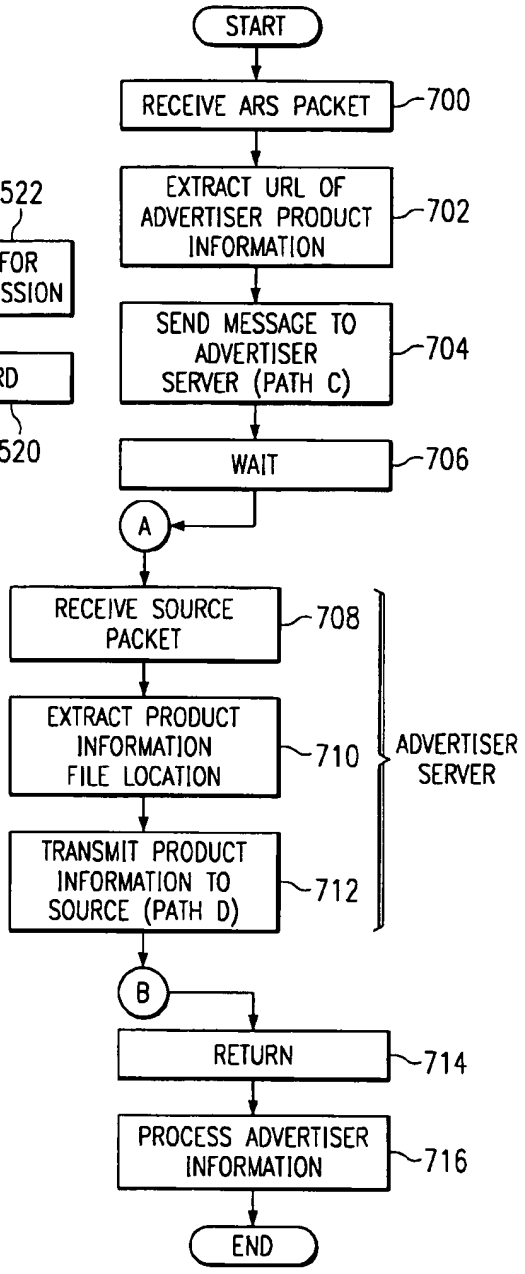
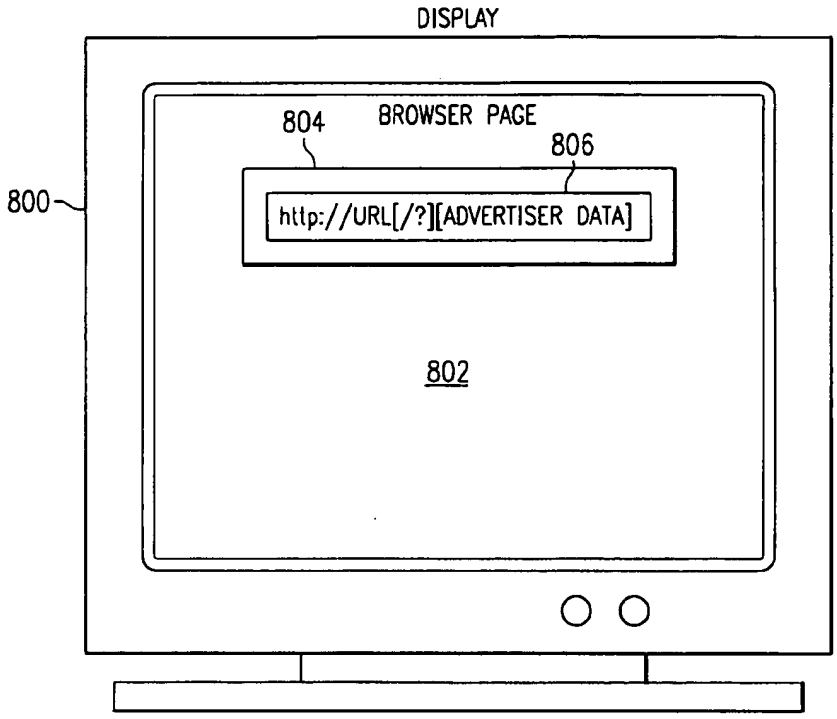

START
RECEIVE ARS PACKET
700
EXTRACT URL OF ADVERTISER PRODUCT INFORMATION
702
SEND MESSAGE TO ADVERTISER SERVER (PATH C)
704
WAIT
706
A
RECEIVE SOURCE PACKET
708
EXTRACT PRODUCT INFORMATION FILE LOCATION
710
TRANSMIT PRODUCT INFORMATION TO SOURCE (PATH D)
712
ADVERTISER SERVER
B
RETURN
714
PROCESS ADVERTISER INFORMATION
716
END

FIG. 7


DISPLAY
800
804
BROWSER PAGE
806
http://URL[/?][ADVERTISER DATA]
802

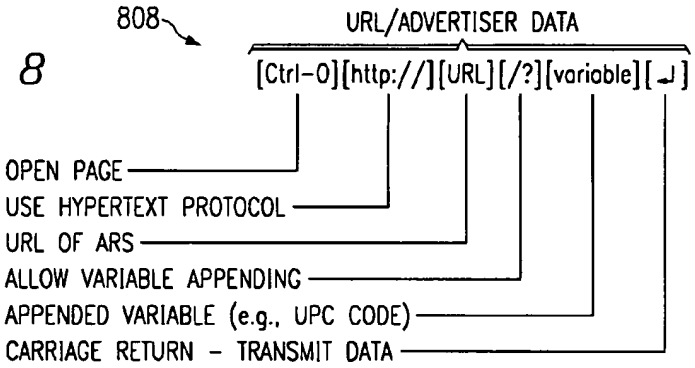

808
URL/ADVERTISER DATA
[Ctrl-0][http://][URL][/?][variable][↵]
OPEN PAGE
USE HYPERTEXT PROTOCOL
URL OF ARS
ALLOW VARIABLE APPENDING
APPENDED VARIABLE (e.g., UPC CODE)
CARRIAGE RETURN - TRANSMIT DATA

FIG. 8

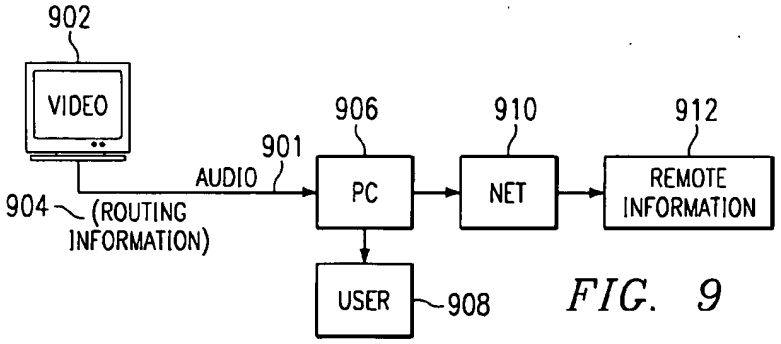

902
VIDEO
906
910
912
901
AUDIO
PC
NET
REMOTE INFORMATION
904
(ROUTING INFORMATION)
USER
908

FIG. 9

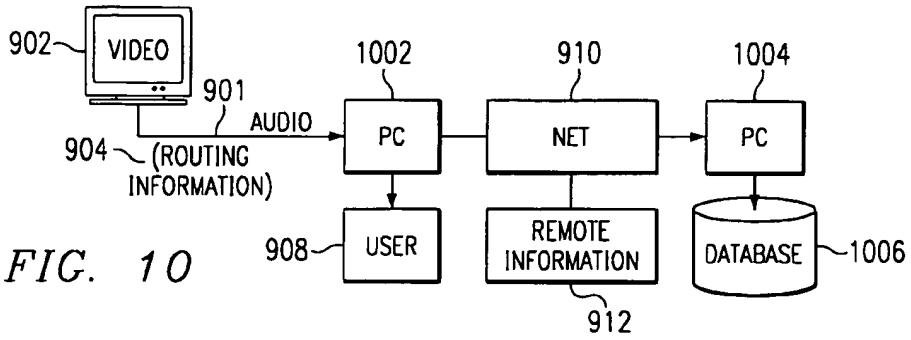


FIG. 10

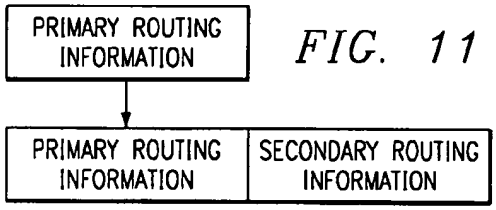


FIG. 11

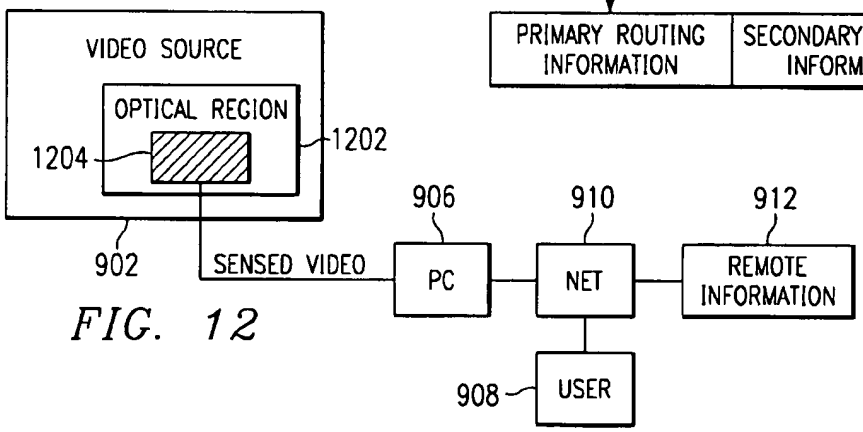


FIG. 12

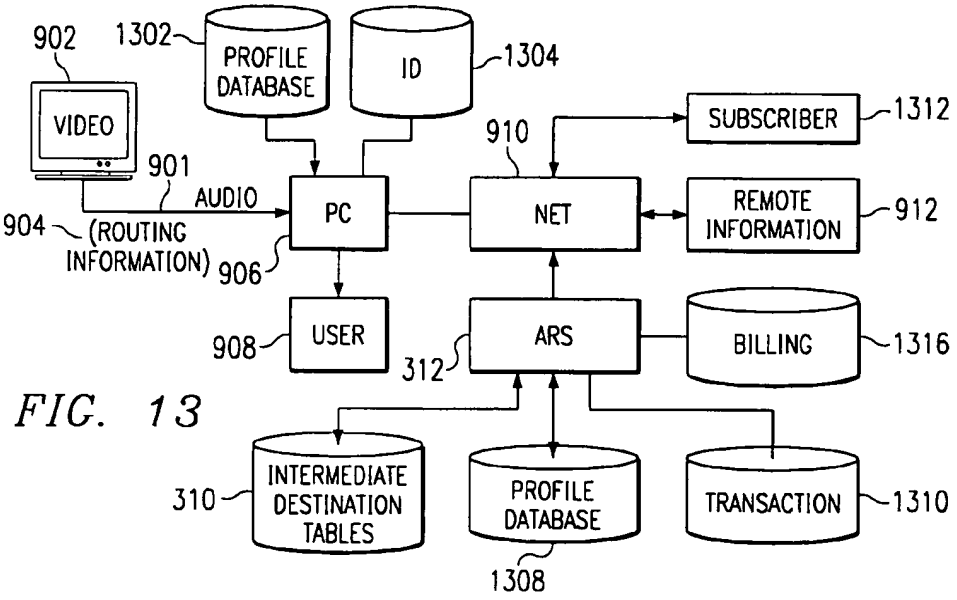


FIG. 13

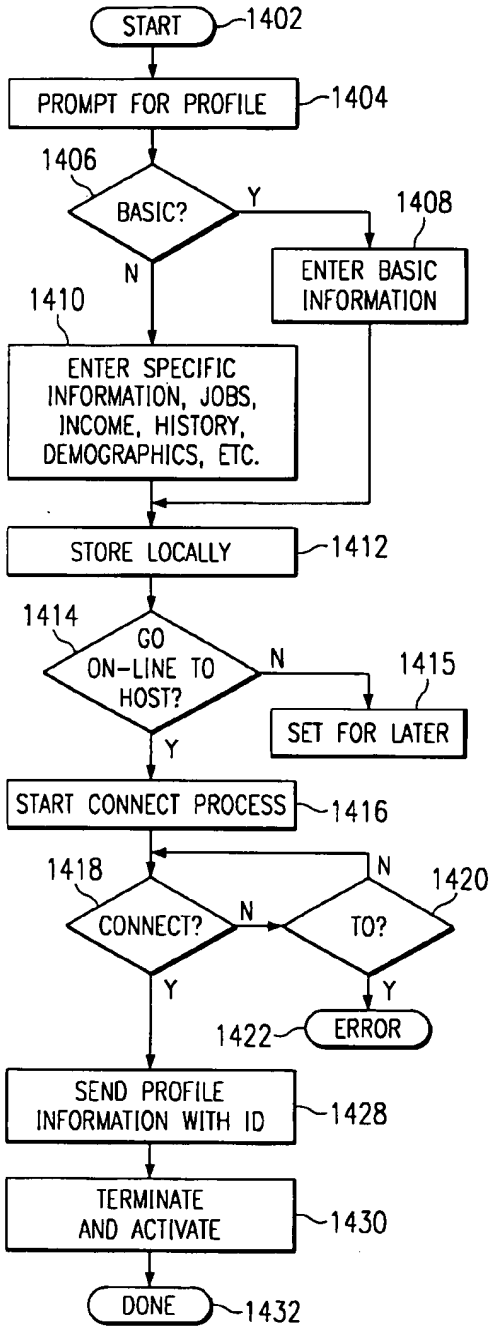

START
1402
PROMPT FOR PROFILE
1404
1406
BASIC?
Y
1408
ENTER BASIC INFORMATION
N
1410
ENTER SPECIFIC INFORMATION, JOBS, INCOME, HISTORY, DEMOGRAPHICS, ETC.
STORE LOCALLY
1412
1414
GO ON-LINE TO HOST?
N
1415
SET FOR LATER
Y
START CONNECT PROCESS
1416
1418
CONNECT?
N
1420
TO?
N
Y
Y
1422
ERROR
SEND PROFILE INFORMATION WITH ID
1428
TERMINATE AND ACTIVATE
1430
DONE
1432

FIG. 14

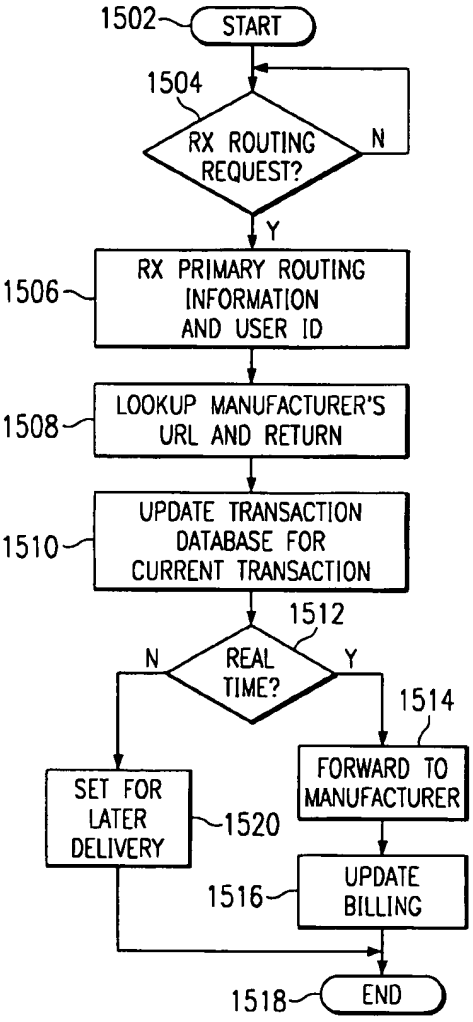
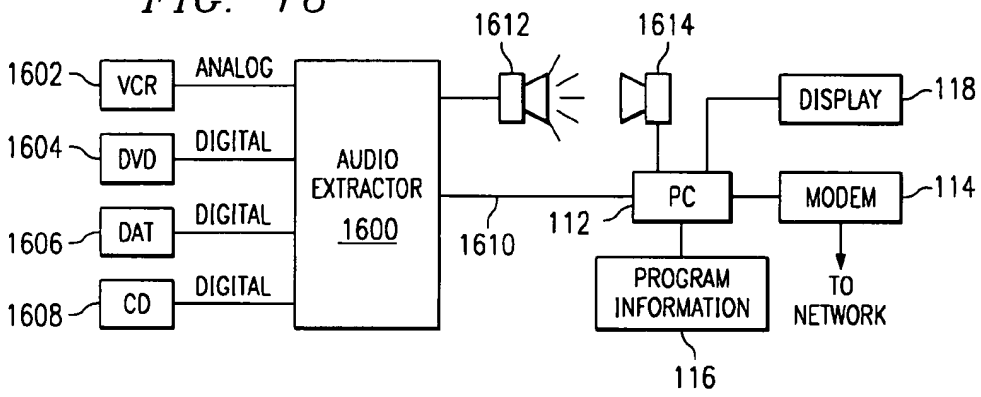

1502
START
1504
RX ROUTING REQUEST?
N
Y
1506
RX PRIMARY ROUTING INFORMATION AND USER ID
1508
LOOKUP MANUFACTURER'S URL AND RETURN
1510
UPDATE TRANSACTION DATABASE FOR CURRENT TRANSACTION
1512
REAL TIME?
N
Y
1514
FORWARD TO MANUFACTURER
SET FOR LATER DELIVERY
1520
1516
UPDATE BILLING
1518
END

FIG. 15

FIG. 16


1612
1614
1602
VCR
ANALOG
1604
DVD
DIGITAL
1606
DAT
DIGITAL
1608
CD
DIGITAL
AUDIO EXTRACTOR 1600
1610
PC
112
DISPLAY
118
MODEM
114
PROGRAM INFORMATION
116
TO NETWORK

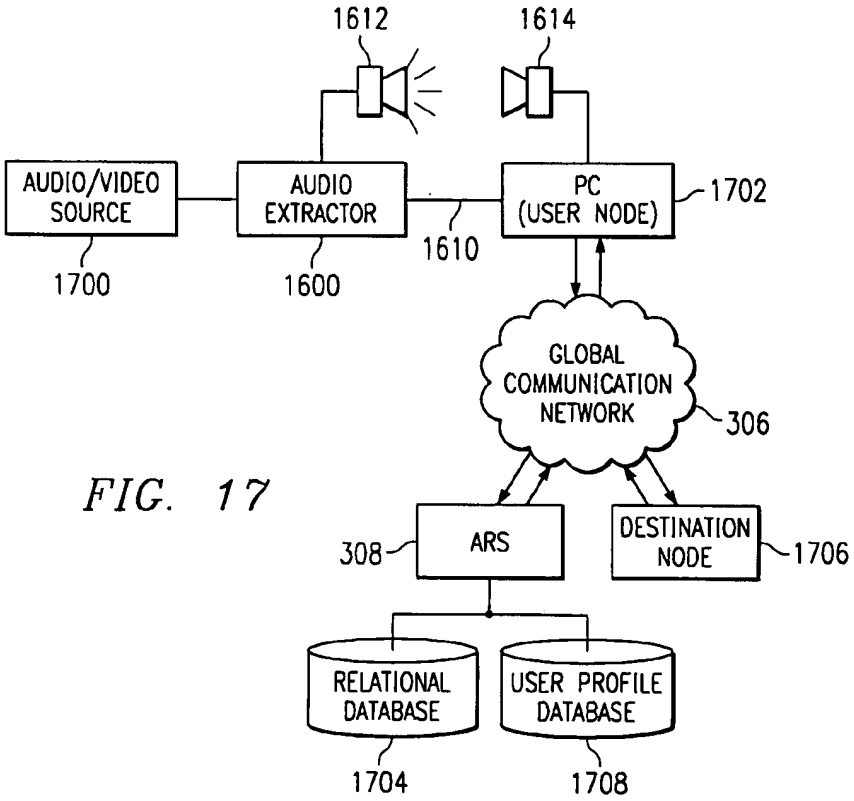

1612
1614
AUDIO/VIDEO SOURCE
1700
AUDIO EXTRACTOR
1600
1610
PC (USER NODE)
1702
GLOBAL COMMUNICATION NETWORK
306
308
ARS
DESTINATION NODE
1706
RELATIONAL DATABASE
1704
USER PROFILE DATABASE
1708

FIG. 17

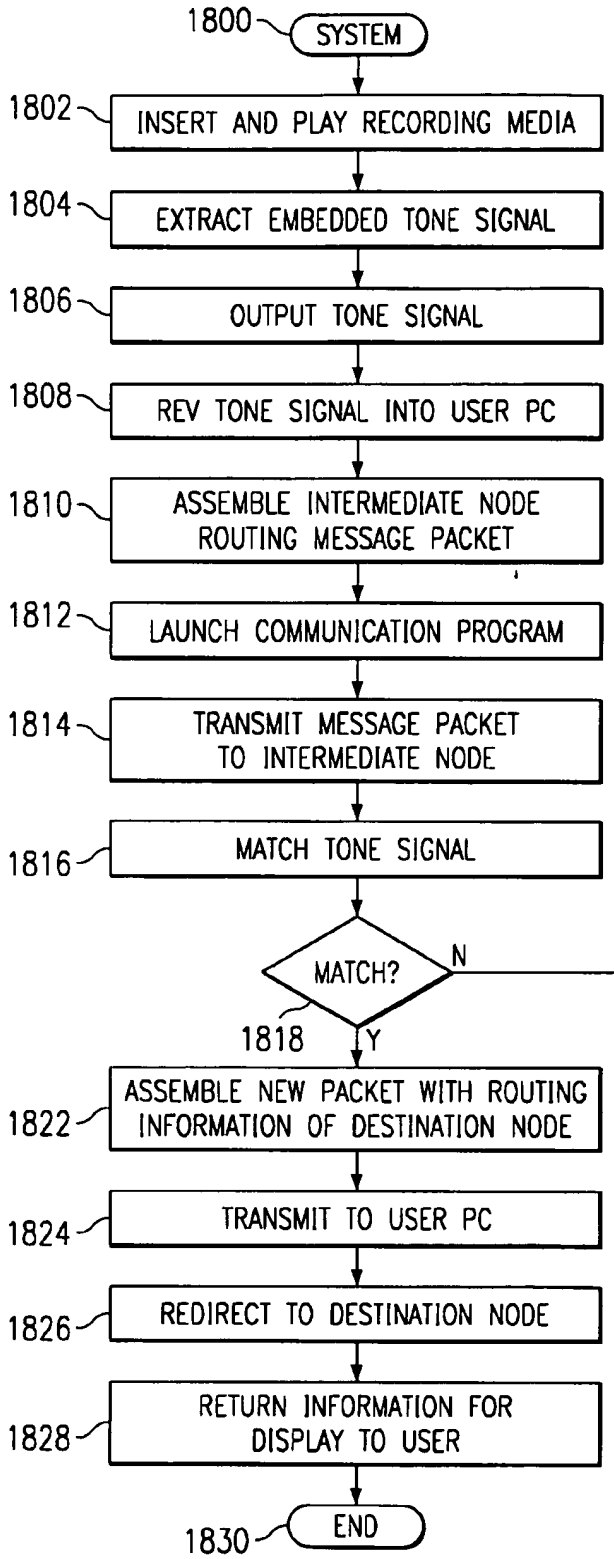

1800
SYSTEM
1802
INSERT AND PLAY RECORDING MEDIA
1804
EXTRACT EMBEDDED TONE SIGNAL
1806
OUTPUT TONE SIGNAL
1808
REV TONE SIGNAL INTO USER PC
1810
ASSEMBLE INTERMEDIATE NODE ROUTING MESSAGE PACKET
1812
LAUNCH COMMUNICATION PROGRAM
1814
TRANSMIT MESSAGE PACKET TO INTERMEDIATE NODE
1816
MATCH TONE SIGNAL
MATCH?
N
Y
1818
1822
ASSEMBLE NEW PACKET WITH ROUTING INFORMATION OF DESTINATION NODE
RETURN MESSAGE
1820
1824
TRANSMIT TO USER PC
1826
REDIRECT TO DESTINATION NODE
1828
RETURN INFORMATION FOR DISPLAY TO USER
1830
END

FIG. 18

METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF DAT MEDIA

CROSS REFERENCE TO RELATED APPLICATION

This application is a Continuation-in-part of U.S. patent application Ser. No. 09/151,530 entitled "METHOD AND APPARATUS FOR CONTROLLING A COMPUTER WITH AN AUDIO SIGNAL" filed Sep. 11, 1998, and which issued on Aug. 1, 2000 as U.S. Pat. No. 6,098,106; and is related to the following U.S. patent application Ser. No. 09/151,471 entitled "METHOD FOR INTERFACING SCANNED PRODUCT INFORMATION WITH A SOURCE FOR THE PRODUCT OVER A GLOBAL NETWORK" filed Sep. 11, 1998, now abandoned; Ser. No. 09/378,222 entitled "METHOD AND APPARATUS FOR EMBEDDING ROUTING INFORMATION TO A REMOTE WEB SITE IN AN AUDIO/VIDEO TRACK" filed on Aug. 19, 1999, still pending; Ser. No. 09/378,220 entitled "METHOD AND APPARATUS FOR CONTROLLING A COMPUTER FROM A REMOTE LOCATION" filed on Aug. 19, 1999, still pending; Ser. No. 09/378,216 entitled "METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF VIDEO TAPE MEDIA" filed on Aug. 19, 1999, still pending; Ser. No. 09/378,218 entitled "METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF DVD MEDIA" filed on Aug. 19, 1999, abandoned; and Ser. No. 09/378,217 entitled "METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF CD MEDIA" filed on Aug. 19, 1999, still pending.

TECHNICAL FIELD OF THE INVENTION

This invention is related to a method of computer control, and particularly for automatically directing a web browser application on the computer to retrieve and display information in response to an analog signal.

BACKGROUND OF THE INVENTION

With the growing numbers of computer users connecting to the "Internet," many companies are seeking the substantial commercial opportunities presented by such a large user base. For example, one technology which exists allows a television ("TV") signal to trigger a computer response in which the consumer will be guided to a personalized web page. The source of the triggering signal may be a TV, video tape recorder, or radio. For example, if a viewer is watching a TV program in which an advertiser offers viewer voting, the advertiser may transmit a unique signal within the television signal which controls a program known as a "browser" on the viewer's computer to automatically display the advertiser's web page. The viewer then simply makes a selection which is then transmitted back to the advertiser.

In order to provide the viewer with the capability of responding to a wide variety of companies using this technology, a database of company information and Uniform Resource Locator ("URL") codes is necessarily maintained in the viewer's computer, requiring continuous updates. URLs are short strings of data that identify resources on the Internet: documents, images, downloadable files, services, electronic mailboxes, and other resources.

URLs make resources available under a variety of naming schemes and access methods such as HTTP, FTP, and Internet mail, addressable in the same simple way. URLs reduce the tedium of "login to this server, then issue this magic command . . . " down to a single click. The Internet uses URLs to specify the location of files on other servers. A URL includes the type of resource being accessed (e.g., Web, gopher, FTP), the address of the server, and the location of the file. The URL can point to any file on any networked computer. Current technology requires the viewer to perform periodic updates to obtain the most current URL database. This aspect of the current technology is cumbersome since the update process requires downloading information to the viewer's computer. Moreover, the likelihood for error in performing the update, and the necessity of redoing the update in the event of a later computer crash, further complicates the process. Additionally, current technologies are limited in the number of companies which may be stored in the database. This is a significant limitation since world-wide access presented by the Internet and the increasing number of companies connecting to perform on-line commerce necessitates a large database.

SUMMARY OF THE INVENTION

The present invention disclosed and claimed herein comprises a method for controlling a computer via a unique code which is embedded in the content of recorded information of a digital audio tape. The unique code in close association with vendor information. The unique code is extracted with an extractor during output of the recorded information to a user at a user location disposed on a network. In response to extracting the unique code, the unique code is transmitted to a remote location on the network in accordance with routing information stored at the user location, wherein the vendor information is returned to the user location for processing.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying Drawings in which:

FIG. **1** illustrates a block diagram of the preferred embodiment;

FIG. **2** illustrates the computer components employed in this embodiment;

FIG. **3** illustrates system interactions over a global network;

FIGS. **4***a*–**4***e* illustrate the various message packets transmitted between the source PC and network servers used in the preferred embodiment;

FIG. **5** is a flowchart depicting operation of the system according to the preferred embodiment;

FIG. **6** illustrates a flowchart of actions taken by the Advertiser Reference Server ("ARS") server;

FIG. **7** illustrates a flowchart of the interactive process between the source computer and ARS;

FIG. **8** illustrates a web browser page receiving the modified URL/advertiser product data according to the preferred embodiment;

FIG. **9** illustrates a simplified block diagram of the disclosed embodiment;

FIG. **10** illustrates a more detailed, simplified block diagram of the embodiment of FIG. **9**;

FIG. 11 illustrates a diagrammatic view of a method for performing the routing operation;

FIG. 12 illustrates a block diagram of an alternate embodiment utilizing an optical region in the video image for generating the routing information;

FIG. 13 illustrates a block diagram illustrating the generation of a profile with the disclosed embodiment;

FIG. 14 illustrates a flowchart for generating the profile and storing at the ARS;

FIG. 15 illustrates a flowchart for processing the profile information when information is routed to a user;

FIG. 16 illustrates a block diagram according to an alternative embodiment;

FIG. 17 illustrates a diagrammatic view of the interconnection with the network in the disclosure of FIG. 16; and

FIG. 18 illustrates a flowchart depicting the operation at the recording media architecture.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIG. 1, there is illustrated a block diagram of a system for controlling a personal computer ("PC") **112** via an audio tone transmitted over a wireless system utilizing a TV. In the embodiment illustrated in FIG. 1, there is provided a transmission station **101** and a receive station **117** that are connected via a communication link **108**. The transmission station **101** is comprised of a television program source **104**, which is operable to generate a program in the form of a broadcast signal comprised of video and audio. This is transmitted via conventional techniques along channels in the appropriate frequencies. The program source is input to a mixing device **106**, which mixing device is operable to mix in an audio signal. This audio signal is derived from an audio source **100** which comprises a coded audio signal which is then modulated onto a carrier which is combined with the television program source **104**. This signal combining can be done at the audio level, or it can even be done at the RF level in the form of a different carrier. However, the preferred method is to merely sum the audio signal from the modulator **102** into the audio channel of the program that is generated by the television program source **104**. The output thereof is provided from the mixing device **106** in the form of broadcast signal to an antenna **107**, which transmits the information over the communication link **108** to an antenna **109** on the receive side.

On the receive side of the system, a conventional receiver **110**, such as a television is provided. This television provides a speaker output which provides the user with an audible signal. This is typically associated with the program. However, the receiver **110** in the disclosed embodiment, also provides an audio output jack, this being the type RCA jack. This jack is utilized to provide an audio output signal on a line **113** which is represented by an audio signal **111**. This line **113** provides all of the audio that is received over the communication link **108** to the PC **112** in the audio input port on the PC **112**. However, it should be understood that, although a direct connection is illustrated from the receiver **110** to the PC **112**, there actually could be a microphone pickup at the PC **112** which could pick the audio signal up. In the disclosed embodiment the audio signal generated by the advertiser data input device **100** is audible to the human ear and, therefore, can be heard by the user. Therefore, no special filters are needed to provide this audio to the PC **112**.

The PC **112** is operable to run programs thereon which typically are stored in a program file area **116**. These programs can be any type of programs such as word processing programs, application programs, etc. In the disclosed embodiment, the program that is utilized in the system is what is referred to as a "browser." The PC **112** runs a browser program to facilitate the access of information on the network, for example, a global communication network known as the "Internet" or the World-Wide-Web ("Web"). The browser is a hypertext-linked application used for accessing information. Hypertext is a term used to describe a particular organization of information within a data processing system, and its presentation to a user. It exploits the computer's ability to link together information from a wide variety of sources to provide the user with the ability to explore a particular topic. The traditional style of presentation used in books employs an organization of the information which is imposed upon it by limitations of the medium, namely fixed sized, sequential paper pages. Hypertext systems, however, use a large number of units of text or other types of data such as image information, graphical information, video information, or sound information, which can vary in size. A collection of such units of information is termed a hypertext document, or where the hypertext documents employ information other than text, hypermedia documents. Multimedia communications may use the Hypertext Transfer Protocol ("HTTP"), and files or formatted data may use the Hypertext Markup Language ("HTML"). This formatting language provides for a mingling of text, graphics, sound, video, and hypertext links by "tagging" a text document using HTML. Data encoded using HTML is often referred to as an "HTML document," an "HTML page," or a "home page." These documents and other Internet resources may be accessed across the network by means of a network addressing scheme which uses a locator referred to as a Uniform Resource Locator ("URL"), for example, "http://www.digital.com."

The Internet is one of the most utilized networks for interconnecting distributed computer systems and allows users of these computer systems to exchange data all over the world. Connected to the Internet are many private networks, for example, corporate or commercial networks. Standard protocols, such as the Transport Control Protocol ("TCP") and the Internet Protocol ("IP") provide a convenient method for communicating across these diverse networks. These protocols dictate how data are formatted and communicated. As a characteristic of the Internet, the protocols are layered in an IP stack. At higher levels of the IP stack, such as the application layer (where HTTP is employed), the user information is more readily visible, while at lower levels, such as the network level (where TCP/IP are used), the data can merely be observed as packets or a stream of rapidly moving digital signals. Superimposed on the Internet is a standard protocol interface for accessing Web resources, such as servers, files, Web pages, mail messages, and the like. One way that Web resources can be accessed is by browsers made by Netscape® and Microsoft Internet Explorer®.

Referring again now to FIG. 1, the user can load this program with the appropriate keystrokes such that a browser window will be displayed on a display **118**. In one embodiment, the user can run the browser program on the PC **112** such that the browser window is displayed on the display **118**. While watching a preferred program, the user can also view display **118**. When an audio signal is received by the receiver **110** and the encoded information is contained therein that was input thereto by the advertiser, the PC **112** will then perform a number of operations. The first operation, according to the disclosed embodiment, is to

extract the audio information within the received audio signal in the form of digital data, and then transmit this digital data to a defined location on the global communication network via a modem connection **114**. This connection will be described hereinbelow. This information will be relayed to a proprietary location and the instructions sent back to the PC **112** as to the location of the advertiser associated with the code, and the PC **112** will then effect a communication link to that location such that the user can view on the display **118** information that the advertiser, by the fact of putting the tone onto the broadcast channel, desires the viewer to view. This information can be in the form of interactive programs, data files, etc. In one example, when an advertisement appears on the television, the tone can be generated and then additional data displayed on the display **118**. Additionally, a streaming video program could be played on the PC received over the network, which streaming video program is actually longer than the advertising segment on the broadcast. Another example would be a sports game that would broadcast the tone in order to allow a user access to information that is not available over the broadcast network, such as additional statistics associated with the sports program, etc.

By utilizing the system described herein with respect to the disclosed embodiment of FIG. **1**, an advertiser is allowed the ability to control a user's PC **112** through the use of tones embedded within a program audio signal. As will described hereinbelow, the disclosed embodiment utilizes particular routing information stored in the PC **112** which allows the encoded information in the received audio signal to route this information to a desired location on the network, and then allow other routing information to be returned to the PC **112** for control thereof to route the PC **112** to the appropriate location associated with that code.

Referring now to FIG. **2**, there is illustrated a computer **204**, similar to computer **112**, connected to display information on display **118**. The computer **204** comprises an internal audio or "sound" card **206** for receiving the transmitted audio signal through receive antenna **109** and receiver **110**. The sound card **206** typically contains analog-to-digital circuitry for converting the analog audio signal into a digital signal. The digital signal may then be more easily manipulated by software programs. The receiver **110** separates the audio signal from the video signal. A special trigger signal located within the transmitted advertiser audio signal triggers proprietary software running on the computer **204** which launches a communication application, in this particular embodiment, the web browser application located on the PC **204**. Coded advertiser information contained within the audio signal is then extracted and appended with the address of a proprietary server located on the communication network. The remote server address is in the form of a URL. This appended data, in addition to other control codes, is inserted directly into the web browser application for automatic routing to the communication network. The web browser running on PC **204**, and communicating to the network with an internal modem **208**, in this embodiment, transmits the advertiser information to the remote server. The remote server cross-references the advertiser product information to the address of the advertiser server located on the network. The address of the advertiser server is routed back through the PC **204** web browser to the advertiser server. The advertiser product information is returned to PC **204** to be presented to the viewer on display **118**. In this particular embodiment, the particular advertiser product information displayed is contained within the advertiser's web page **212**. As mentioned above, the audio signal is audible to the human ear. Therefore the audio signal, as emitted from the TV speakers, may be input to the sound card **206** via a microphone. Furthermore, the audio signal need not be a real-time broadcast, but may be on video tapes, CDs, DVD, or other media which may be displayed at a later date. With the imminent implementation of high definition digital television, the audio signal output from the TV may also be digital. Therefore, direct input into a sound card for A/D purposes may not be necessary, but alternative interfacing techniques to accommodate digital-to-digital signal formats would apply.

Referring now to FIG. **3**, there is illustrated a source PC **302**, similar to PCs **204** and **112**, connected to a global communication network (GCN) **306** through an interface **304**. In this embodiment, the audio signal **111** is received by PC **302** through its sound card **206**. The audio signal **111** comprises a trigger signal which triggers proprietary software into launching a web browser application residing on the PC **302**. The audio signal **111** also comprises advertiser product information which is extracted and appended with URL information of an Advertiser Reference Server ("ARS") **308**. The ARS **308** is a system disposed on the network **306** that is defined as the location to which data in the audio signal **111** is to be routed. As such, data in the audio signal **111** will always be routed to the ARS **308**, since a URL is unique on the GCN **306**. Connected to the ARS **308** is a database **310** of product codes and associated manufacturer URLs. The database **310** undergoes a continual update process which is transparent to the user. As companies sign-on, i.e., subscribe, to this technology, manufacturer and product information is added to the database **310** without interrupting operation of the source PC **302** with frequent updates. When the advertiser server address URL is obtained from the ARS database **310**, it and the request for the particular advertiser product information are automatically routed back through the web browser on PC **302**, over to the respective advertiser server for retrieval of the advertiser product information to the PC **302**. Additionally, although the disclosed invention discusses a global communication network, the system is also applicable to LANs, WANs, and peer-to-peer network configurations. It should be noted that the disclosed architecture is not limited to a single source PC **302**, but may comprise a plurality of source PCs, e.g., PC **300** and PC **303**. Moreover, a plurality of ARS **308** systems and advertiser servers **312** may be implemented, e.g., ARS **314**, and advertiser server A **316**, respectively.

The information transactions, in general, which occur between the networked systems of this embodiment, over the communication network, are the following. The web browser running on source PC **302** transmits a message packet to the ARS **308** over Path "A." The ARS **308** decodes the message packet and performs a cross-reference function with product information extracted from the received message packet to obtain the address of an advertiser server **312**. A new message packet is assembled comprising the advertiser server **312** address, and sent back to the source PC **302** over Path "B." A "handoff" operation is performed whereby the source PC **302** browser simply reroutes the information on to the advertiser server **312** over Path "C," with the appropriate source and destination address appended. The advertiser server **312** receives and decodes the message packet. The request-for-advertiser-product-information is extracted and the advertiser **312** retrieves the requested information from its database for transmission back to the source PC **302** over Path "D." The source PC **302** then processes the information, i.e., for display to the viewer. The optional Path "E" is discussed hereinbelow. It should be

noted that the disclosed methods are not limited to only browser communication applications, but may accommodate, with sufficient modifications by one skilled in the art, other communication applications used to transmit information over the Internet or communication network.

Referring now to FIG. **4***a*, the message packet **400** sent from the source PC **302** to ARS **308** via Path "A" comprises several fields. One field comprises the URL of the ARS **308** which indicates where the message packet is to be sent. Another field comprises the advertiser product code or other information derived from the audio signal **111**, and any additional overhead information required for a given transaction. The product code provides a link to the address of the advertiser server **312**, located in the database **310**. Yet another field comprises the network address of the source PC **302**. In general, network transmissions are effected in packets of information, each packet providing a destination address, a source address, and data. These packets vary depending upon the network transmission protocol utilized for communication. Although the protocols utilized in the disclosed embodiment are of a conventional protocol suite commonly known as TCP/IP, it should be understood that any protocols providing the similar basic functions can be used, with the primary requirement that a browser can forward the routing information to the desired URL in response to keystrokes being input to a PC. However, it should be understood that any protocol can be used, with the primary requirement that a browser can forward the product information to the desired URL in response to keystrokes being input to a PC. Within the context of this disclosure, "message packet" shall refer to and comprise the destination URL, product information, and source address, even though more than a single packet must be transmitted to effect such a transmission.

Upon receipt of the message packet **400** from source PC **302**, ARS **308** processes the information in accordance with instructions embedded in the overhead information. The ARS **308** specifically will extract the product code information from the received packet **400** and, once extracted, will then decode this product code information. Once decoded, this information is then compared with data contained within the ARS advertiser database **310** to determine if there is a "hit." If there is no "hit" indicating a match, then information is returned to the browser indicating such. If there is a "hit," a packet **402** is assembled which comprises the address of the source PC **302**, and information instructing the source PC **302** as to how to access, directly in a "handoff" operation, another location on the network, that of an advertiser server **312**. This type of construction is relatively conventional with browsers such as Netscape® and Microsoft Internet Explorer® and, rather than displaying information from the ARS **308**, the source PC **302** can then access the advertiser server **312**. The ARS **308** transmits the packet **402** back to source PC **302** over Path "B." Referring now to FIG. **4***b*, the message packet **402** comprises the address of the source PC **302**, the URL of the advertiser server **312** embedded within instructional code, and the URL of the ARS **308**.

Upon receipt of the message packet **402** by the source PC **302**, the message packet **402** is disassembled to obtain pertinent routing information for assembly of a new message packet **404**. The web browser running on source PC **302** is now directed to obtain, over Path "C," the product information relevant to the particular advertiser server **312** location information embedded in message packet **404**. Referring now to FIG. **4***c*, the message packet **404** for this transaction comprises the URL of the advertiser server **312**, the request-for-product-information data, and the address of the source PC **302**.

Upon receipt of the message packet **404** from source PC **302**, advertiser server **312** disassembles the message packet **404** to obtain the request-for-product-information data. The advertiser server **312** then retrieves the particular product information from its database, and transmits it over Path "D" back to the source PC **302**. Referring now to FIG. **4***d*, the message packet **406** for this particular transaction comprises the address of the source PC **302**, the requested information, and the URL of the advertiser server **312**.

Optionally, the ARS **308** may make a direct request for product information over Path "E" to advertiser server **312**. In this mode, the ARS **308** sends information to the advertiser server **312** instructing it to contact the source PC **302**. This, however, is unconventional and requires more complex software control. The message packet **408** for this transaction is illustrated in FIG. **4***e*, which comprises the URL of the advertiser server **312**, the request-for-product-information data, and the address of the source PC **302**. Since product information is not being returned to the ARS **308**, but directly to the source PC **302**, the message packet **408** requires the return address to be that of the source PC **302**. The product information is then passed directly to PC **302** over Path "D."

Referring now to FIG. **5**, the method for detecting and obtaining product information is as follows. In decision block **500**, a proprietary application running resident on a source computer PC **302** (similar to PC **204**) monitors the audio input for a special trigger signal. Upon detection of the trigger signal, data following the trigger signal is decoded for further processing, in function block **502**. In function block **504**, the data is buffered for further manipulation. In decision block **506**, a determination is made as to whether the data can be properly authenticated. If not, program flow continues through the "N" signal to function block **520** where the data is discarded. In function block **522**, the program then signals for a retransmission of the data. The system then waits for the next trigger signal, in decision block **500**. If properly authenticated in decision block **506**, program flow continues through the "Y" signal path where the data is then used to launch the web browser application, as indicated in function block **508**. In function block **510**, the web browser receives the URL data, which is then automatically routed through the computer modem **208** to the network interface **304** and ultimately to the network **306**. In function block **514**, the ARS **308** responds by returning the URL of advertiser server **312** to the PC **302**. In function block **516**, the web browser running on the source PC **302**, receives the advertiser URL information from the ARS **308**, and transmits the URL for the product file to the advertiser server **312**. In block **518**, the advertiser server **312** responds by sending the product information to the source PC **302** for processing.

The user may obtain the benefits of this architecture by simply downloading the proprietary software over the network. Other methods for obtaining the software are well-known; for example, by CD, diskette, or pre-loaded hard drives.

Referring now to FIG. **6**, there is illustrated a flowchart of the process the ARS **308** may undergo when receiving the message packet **400** from the source PC **302**. In decision block **600**, the ARS **308** checks for the receipt of the message packet **400**. If a message packet **400** is not received, program flow moves along the "N" path to continue waiting for the message. If the message packet **400** is received, program flow continues along path "Y" for message processing. Upon receipt of the message packet **400**, in function block **602**, the ARS **308** decodes the message packet **400**.

The product code is then extracted independently in function block **604** in preparation for matching the product code with the appropriate advertiser server address located in the database **310**. In function block **606**, the product code is then used with a look-up table to retrieve the advertiser server **312** URL of the respective product information contained in the audio signal data. In function block **608**, the ARS **308** then assembles message packet **402** for transmission back to the source PC **302**. Function block **610** indicates the process of sending the message packet **402** back to the source PC **302** over Path "B."

Referring now to FIG. **7**, there is illustrated a flowchart of the interactive processes between the source PC **302** and the advertiser server **312**. In function block **700**, the source PC **302** receives the message packet **402** back from the ARS **308** and begins to decode the packet **402**. In function block **702**, the URL of the advertiser product information is extracted from the message packet **402** and saved for insertion into the message packet **404** to the advertiser server **312**. The message packet **404** is then assembled and sent by the source PC **302** over Path "C" to the advertiser server **312**, in function block **704**. While the source PC **302** waits, in function block **706**, the advertiser server **312** receives the message packet **404** from the source PC **302**, in function block **708**, and disassembles it. The product information location is then extracted from the message packet **404** in function block **710**. The particular product information is retrieved from the advertiser server **312** database for transmission back to the source PC **302**. In function block **712**, the product information is assembled into message packet **406** and then transmitted back to the source PC **302** over Path "D." Returning to the source PC **302** in function block **714**, the advertiser product information contained in the message packet **406** received from the advertiser server **312**, is then extracted and processed in function block **716**.

Referring now to FIG. **8**, after receipt of a trigger signal, a web browser application on a source PC **302** is automatically launched and computer display **800** presents a browser page **802**. Proprietary software running on the source PC **302** processes the audio signal data after being digitized through the sound card **206**. The software appropriately prepares the data for insertion directly into the web browser by extracting the product information code and appending keystroke data to this information. First, a URL page **804** is opened in response to a Ctrl-O command added by the proprietary software as the first character string. Opening URL page **804** automatically positions the cursor in a field **806** where additional keystroke data following the Ctrl-O command will be inserted. After URL page **804** is opened, the hypertext protocol preamble http:// is inserted into the field **806**. Next, URL information associated with the location of the ARS **308** is inserted into field **806**. Following the ARS **308** URL data are the characters/? to allow entry of variables immediately following the/? characters. In this embodiment, the variable following is the product information code received in the audio signal. The product code information also provides the cross-reference information for obtaining the advertiser URL from the ARS database **310**. Next, a carriage return is added to send the URL/product data and close the window **804**. After the message packet **400** is transmitted to the ARS **308** from the source PC **302**, transactions from the ARS **308**, to the source PC **302**, to the advertiser server **312**, and back to the source PC **302**, occur quickly and are transparent to the viewer. At this point, the next information the viewer sees is the product information which was received from the advertiser server **312**.

Referring now to FIG. **9**, there is illustrated a block diagram of a more simplified embodiment. In this embodiment, a video source **902** is provided which is operable to provide an audio output on an audio cable **901** which provides routing information referred to by reference numeral **904**. The routing information **904** is basically information contained within the audio signal. This is an encoded or embedded signal. The important aspect of the routing information **904** is that it is automatically output in realtime as a function of the broadcast of the video program received over the video source **902**. Therefore, whenever the program is being broadcast in realtime to the user **908**, the routing information **904** will be output whenever the producer of the video desires it to be produced. It should be understood that the box **902** representing the video source could be any type of media that will result in the routing information being output. This could be a cassette player, a DVD player, an audio cassette, a CD ROM or any such media. It is only important that this is a program that the producer develops which the user **908** watches in a continuous or a streaming manner. Embedded within that program, at a desired point selected by the producer, the routing information **904** is output.

The audio information is then routed to a PC **906**, which is similar to the PC **112** in FIG. **1**. A user **908** is interfaced with the PC to receive information thereof, the PC **906** having associated therewith a display (not shown). The PC **906** is interfaced with a network **910**, similar to the network **306** in FIG. **3**. This network **910** has multiple nodes thereon, one of which is the PC **906**, and another of which is represented by a network node **912** which represents remote information. The object of the present embodiment is to access remote information for display to the user **908** by the act of transmitting from the video program in block **902** the routing information **904**. This routing information **904** is utilized to allow the PC **906** which has a network "browser" running thereon to "fetch" the remote information at the node **912** over the network **910** for display to the user **908**. This routing information **904** is in the form of an embedded code within the audio signal, as was described hereinabove.

Referring now to FIG. **10**, there is illustrated a more detailed block diagram of the embodiment of FIG. **9**. In this embodiment, the PC **906** is split up into a couple of nodes, a first PC **1002** and a second PC **1004**. The PC **1002** resides at the node associated with the user **908**, and the PC **1004** resides at another node. The PC **1004** represents the ARS **308** of FIG. **3**. The PC **1004** has a database **1006** associated therewith, which is basically the advertiser database **310**. Therefore, there are three nodes on the network **910** necessary to implement the disclosed embodiment, the PC **1002**, the PC **1004** and the remote information node **912**. The routing information **904** is utilized by the PC **1002** for routing to the PC **1004** to determine the location of the remote information node **912** on the network **910**. This is returned to the PC **1002** and a connection made directly with the remote information node **912** and the information retrieved therefrom to the user **908**. The routing information **904** basically constitutes primary routing information.

Referring now to FIG. **11**, there is illustrated a diagrammatic view of how the network packet is formed for sending the primary routing information to the PC **1004**. In general, the primary routing information occupies a single field which primary routing information is then assembled into a data packet with the secondary routing information for transfer to the network **910**. This is described hereinabove in detail.

Referring now to FIG. **12**, there is illustrated an alternate embodiment to that of FIG. **9**. In this embodiment, the video source **902** has associated therewith an optical region **1202**,

which optical region **1202** has disposed therein an embedded video code. This embedded video code could be relatively complex or as simple as a grid of dark and white regions, each region in the grid able to have a dark color for a logic "1" or a white region for a logic "0." This will allow a digital value to be disposed within the optical region **1202**. A sensor **1204** can then be provided for sensing this video code. In the example above, this would merely require an array of optical detectors, one for each region in the grid to determine whether this is a logic "1" or a logic "0" state. One of the sensed video is then output to the PC **906** for processing thereof to determine the information contained therein, which information contained therein constitutes the primary routing information **904**. Thereafter, it is processed as described hereinabove with reference to FIG. **9**.

Referring now to FIG. **13**, there is illustrated a block diagram for an embodiment wherein a user's profile can be forwarded to the original subscriber or manufacturer. The PC **906** has associated therewith a profile database **1302**, which profile database **1302** is operable to store a profile of the user **908**. This profile is created when the program, after initial installation, requests profile information to be input in order to activate the program. In addition to the profile, there is also a unique ID that is provided to the user **908** in association with the browser program that runs on the PC **906**. This is stored in a storage location represented by a block **1304**. This ID **1304** is accessible by a remote location as a "cookie" which is information that is stored in the PC **906** in an accessible location, which accessible location is actually accessible by the remote program running on a remote node.

The ARS **308**, which basically constitutes the PC **1004** of FIG. **10**, is operable to have associated therewith a profile database **1308**, which profile database **1308** is operable to store profiles for all of the users. The profile database **1308** is a combination of the information stored in profile database **1302** for all of the PCs **906** that are attachable to the system. This is to be distinguished from information stored in the database **310** of the ARS **308**, the advertiser's database, which contains intermediate destination tables. When the routing information in the primary routing information **904** is forwarded to the ARS **308** and extracted from the original data packet, the look-up procedure described hereinabove can then be performed to determine where this information is to be routed. The profile database **1302** is then utilized for each transaction, wherein each transaction in the form of the routing information received from the primary routing information **904** is compared to the destination tables of database **310** to determine what manufacturer is associated therewith. The associated ID **1304** that is transmitted along with the routing information in primary routing information **904** is then compared with the profile database **1308** to determine if a profile associated therewith is available. This information is stored in a transaction database **1310** such that, at a later time, for each routing code received in the form of the information in primary routing information **904**, there will associated therewith the IDs **1304** of each of the PCs **906**. The associated profiles in database **1308**, which are stored in association with IDs **1304**, can then be assembled and transmitted to a subscriber as referenced by a subscriber node **1312** on the network **910**. The ARS **308** can do this in two modes, a realtime mode or a non-realtime mode. In a realtime mode, each time a PC **906** accesses the advertiser database **310**, that user's profile information is uploaded to the subscriber node **1312**. At the same time, billing information is generated for that subscriber **1312** which is stored in a billing database **1316**. Therefore, the ARS **308** has the ability to inform the subscriber **1312** of each transaction, bill for those transactions, and also provide to the subscriber **1312** profile information regarding who is accessing the particular product advertisement having associated therewith the routing information field **904** for a particular routing code as described hereinabove. This information, once assembled, can then be transmitted to the subscriber **1312** and also be reflected in billing information and stored in the billing information database **1316**.

Referring now to FIG. **14**, there is illustrated a flowchart depicting the operation for storing the profile for the user. The program is initiated in a block **1402** and then proceeds to a function block **1404**, wherein the system will prompt for the profile upon initiation of the system. This initiation is a function that is set to activate whenever the user initially loads the software that he or she is provided. The purpose for this is to create, in addition to the setup information, a user profile. Once the user is prompted for this, then the program will flow to a decision block **1406** to determine whether the user provides basic or detailed information. This is selectable by the user. If selecting basic, the program will flow to a function block **1408** wherein the user will enter basic information such as name and serial number and possibly an address. However, to provide some incentive to the user to enter more information, the original prompt in function block **1404** would have offers for such things as coupons, discounts, etc., if the user will enter additional information. If the user selects this option, the program flows from the decision block **1406** to a function block **1410**. In the function block **1410**, the user is prompted to enter specific information such as job, income level, general family history, demographic information and more. There can be any amount of information collected in this particular function block.

Once all of the information is collected, in either the basic mode or the more specific mode, the program will then flow to a function block **1412** where this information is stored locally. The program then flows to a decision block **1414** to then go on-line to the host or the ARS **308**. In general, the user is prompted to determine whether he or she wants to send this information to the host at the present time or to send it later. If he or she selects the "later" option, the program will flow to a function block **1415** to prompt the user at a later time to send the information. In the disclosed embodiment, the user will not be able to utilize the software until the profile information is sent to the host. Therefore, the user may have to activate this at a later time in order to connect with the host.

If the user has selected the option to upload the profile information to the host, the program will flow to the function block **1416** to initiate the connect process and then to a decision block **1418** to determine if the connection has been made. If not, the program will flow along a "N" path to a decision block **1420** which will timeout to an error block **1422** or back to the input of the connect decision block **1418**. The program, once connected, will then flow along a "Y" path from decision block **1418** to a function block **1428** to send the profile information with the ID of the computer or user to the host. The ID is basically, as described hereinabove, a "cookie" in the computer which is accessed by the program when transmitting to the host. The program will then flow to a function block **1430** to activate the program such that it, at later time, can operate without requiring all of the setup information. In general, all of the operation of this flowchart is performed with a "wizard" which steps the user through the setup process. Once complete, the program will flow to a Done block **1432**.

Referring now to FIG. **15**, there is illustrated a flowchart depicting the operation of the host when receiving a transaction. The program is initiated at a Start block **1502** and then proceeds to decision block **1504**, wherein it is determined whether the system has received a routing request, i.e., the routing information **904** in the form of a tone, etc., embedded in the audio signal, as described hereinabove with respect to FIG. **9**. The program will loop back around to the input of decision block **1504** until the routing request has been received. At this time, the program will flow along the "Y" path to a function block **1506** to receive the primary routing information and the user ID. Essentially, this primary routing information is extracted from the audio tone, in addition to the user ID. The program then flows to a function block **1508** to look up the manufacturer URL that corresponds to the received primary routing information and then return the necessary command information to the originating PC **112** in order to allow that PC **112** to connect to the destination associated with the primary routing information. Thereafter, the program will flow to a function block **1510** to update the transaction database **1310** for the current transaction. In general, the routing information **904** will be stored as a single field with the associated IDs. The profile database **1308**, as described hereinabove, has associated therewith detailed profiles of each user on the system that has activated their software in association with their ID. Since the ID was sent in association with the routing information, what is stored in the transaction database **1310** is the routing code, in association with all of the IDs transmitted to the system in association with that particular routing code. Once this transaction database **1310** has been updated, as described hereinabove, the transactions can be transferred back to the subscriber at node **312** with the detailed profile information from the profile database **1308**.

The profile information can be transmitted back to the subscriber or manufacturer at the node **312** in realtime or non-realtime. A decision block **1512** is provided for this, which determines if the delivery is realtime. If realtime, the program will flow along a "Y" path to a function block **1514** wherein the information will be immediately forwarded to the manufacturer or subscriber. The program will then flow to a function block **1516** wherein the billing for that particular manufacturer or subscriber will be updated in the billing database **1316**. The program will then flow into an End block **1518**. If it was non-realtime, the program moves along the "N" path to a function block **1520** wherein it is set for a later delivery and it is accrued in the transaction database **1310**. In any event, the transaction database **1310** will accrue all information associated with a particular routing code.

With a realtime transaction, it is possible for a manufacturer to place an advertisement in a magazine or to place a product on a shelf at a particular time. The manufacturer can thereafter monitor the times when either the advertisements are or the products are purchased. Of course, they must be scanned into a computer which will provide some delay. However, the manufacturer can gain a very current view of how a product is moving. For example, if a cola manufacturer were to provide a promotional advertisement on, for example, television, indicating that a new cola was going to be placed on the shelf and that the first 1000 purchasers, for example, scanning their code into the network would receive some benefit, such as a chance to win a trip to some famous resort in Florida or some other incentive, the manufacturer would have a very good idea as to how well the advertisement was received. Further, the advertiser would know where the receptive markets were. If this advertiser, for example, had placed the television advertisement in ten cities and received overwhelming response from one city, but very poor response from another city, he would then have some inclination to believe that either the one poor-response city was not a good market or that the advertising medium he had chosen was very poor. Since the advertiser can obtain a relatively instant response and also content with that response as to the demographics of the responder, very important information can be obtained in a relatively short time.

It should be noted that the disclosed embodiment is not limited to a single source PC **302**, but may encompass a large number of source computers connected over a global communication network. Additionally, the embodiment is not limited to a single ARS **308** or a single advertiser server **312**, but may include a plurality of ARS and advertiser systems, indicated by the addition of ARS **314** and advertiser server A **316**, respectively. It should also be noted that this embodiment is not limited only to global communication networks, but also may be used with LAN, WAN, and peer-to-peer configurations.

It should also be noted that the disclosed embodiment is not limited to a personal computer, but is also applicable to, for example, a Network Computer ("NetPC"); a scaled-down version of the PC, or any system which accommodates user interaction and interfaces to information resources.

One typical application of the above noted technique is for providing a triggering event during a program, such as a sport event. In a first example, this may be generated by an advertiser. One could imagine that, due to the cost of advertisements in a high profile sports program, there is a desire to utilize this time wisely. If, for example, an advertiser contracted for 15 seconds worth of advertising time, they could insert within their program a tone containing the routing information. This routing information can then be output to the user's PC **302** which will cause the user's PC **302** to, via the network, obtain information from a remote location typically controlled by the advertiser. This could be in the form of an advertisement of a length longer than that contracted for. Further, this could be an interactive type of advertisement. An important aspect to the type of interaction between the actual broadcast program with the embedded routing information and the manufacturer's site is the fact that there is provided information as to the user's PC **302** and a profile of the user themselves. Therefore, an advertiser can actually gain realtime information as to the number of individuals that are watching their particular advertisement and also information as to the background of those individuals, demographic information, etc. This can be a very valuable asset to an advertiser.

In another example, the producer of the program, whether it be an on-air program, a program embedded in a video tape, CD-ROM, DVD, or a cassette, can allow the user to automatically access additional information that is not displayed on the screen. For example, in a sporting event, various statistics can be provided to the user from a remote location, merely by the viewer watching the program. When these statistics are provided, the advertiser can be provided with demographic information and background information regarding the user. This can be important when, for example, the user may record a sports program. If the manufacturer sees that this program routing code is being output from some device at a time later than the actual broadcast itself, this allows the advertisers to actually see that their program is still being used and also what type of individual is using it. Alternatively, the broadcaster could determine the same and actually bill the advertiser an additional sum for a later

broadcast. This is all due to the fact that the routing information automatically, through a PC and a network, will provide an indication to the advertiser the time at which the actual information was broadcast.

The different type of medium that can be utilized with the above embodiment are such things as advertisements, which are discussed hereinabove, contests, games, news programs, education, coupon promotional programs, demonstration media (demos), and photographs, all of which can be broadcast on a private site or a public site. This all will provide the ability to allow realtime interface with the network and the remote location for obtaining the routed information and also allow for realtime billing and accounting.

Referring now to FIG. **16**, there is illustrated an alternate embodiment of the present disclosure, this being the preferred embodiment. In the embodiment of FIG. **16**, as compared to that of FIG. **1**, the advertiser does not provide an advertisement in the form of a tone to the broadcast program source **104**. Rather, the program source **104**, which is remote with respect to the user PC **112**, is now replaced with a system which is local to the user PC **112**. This local system comprises an audio extractor **1600** which is operable to receive any of a number of analog and digital inputs, for example, which inputs include a video cassette recorder (VCR) **1602** for playing analog tape media having audio/video content thereon, a digital video disk (DVD) unit **1604** for playing DVD disk media having digital audio/video content thereon, a digital audio tape (DAT) unit for playing tape media having digital audio content thereon, and a compact disk (CD) unit **1608** for playing CD media having digital audio content thereon. Note that each of the aforementioned units (**1602**, **1604**, **1606**, and **1608**) may connect directly to the user PC **112** such that the extraction process using the audio extractor **1600** is performed internal to the user PC **112**. Each of the media have audible tones encoded thereon. These audible tones are extracted from the respective signals from one or more of the media by the audio extractor **1600** which may simply perform template matching in order to identify and extract the embedded tone information. The tone is then played through an audio transmitter **1612** (e.g., a speaker). An audio receiver **1614** (e.g., a microphone) connects to the user PC **112** and is operable to receive the audible tones from the audio transmitter **1612**. The analog audible signal is then converted to a digital signal by conventional means.

Software running on the user PC **112** responds to the audible tone received through the audio receiver **1614** by detecting and decoding the tone, and launching a communication program (e.g., a web browser program) which is operable to communicate over the network through the modem **114**. The software running on the user PC **112** assembles a message packet which contains routing information directed to the ARS **308** and the decoded information of the audible tone. The software running on the user PC **112** via the communication program facilitates the linking of the local node (where the user PC **112** is located) to the ARS **308** (an intermediate node location) and transmits the message packet in accordance with information stored in the program info database **116** through a the modem **114** to the ARS **308** disposed on the network.

It can be appreciated that the audio extractor **1600** is operable to accept any units or systems whose outputs contain audio signals. Furthermore, it can be appreciated that the audio extractor **1600** is operable to receive analog or digital signals containing audio content from the user PC **112** over a connection **1610**. For example, if the user of the user PC **112** desires to download an audio or audio/video file from a remote location on a network (not shown) on which both the remote location and the user PC **112** are disposed, the user may then play the file such that the video portion is displayed on the display **118** while the audio portion including the audible tone is output through the audio extractor **1600** to the audio transmitter **1612** of the user PC **112**. An audio receiver **1614** (e.g., a microphone) is operable to receive all audible audio signals, but working in conjunction with onboard architecture, responds only to those embedded audible tones.

Referring now to FIG. **17**, there is illustrated an overall diagrammatic view of the interconnection over the network of the user PC **112**, it now being referred to as user PC **1702** in FIG. **17**. The user PC **1702** is interconnected with the network **306**, as described hereinabove with reference to FIG. **3**, to allow the user PC **1702** to forward the decoded information of the received audible tone to the ARS **308**. As described hereinabove, this forwarding operation is facilitated by a detection operation in the user PC **1702**. The user PC **1702** detects the presence of the audible tone received from the audio source **1700**. (The audio source **1700** in this illustration comprises any of one or more of the audio sources—VCR **1602**, DVD **1604**, DAT **1606**, and CD **1608**.) The user PC **1702** then utilizes this information to connect to the ARS **308**, in conjunction with stored information in the user PC **1702**, and forwards the received tone or the decoded information contained therein, or even a portion of the information contained therein, to the ARS **308**. The ARS **308** utilizes this information for comparison with a relational database **1704** to define or to correlate the received tone information with routing information for a destination node **1706** on the network **306**. Once the ARS **308** has determined that there is routing information that correlates to the tone information received from the user PC **1702**, then this information is assembled in a packet and transferred back to the user PC **1702**. The user PC **1702** then utilizes this redirected routing information to allow the user PC **1702** to make a connection with the destination node **1706**. This destination node **1706** can then transmit information back to the user PC **1702** in the form of a web page or the such. As described hereinabove, a web browser software program is utilized to interface with the ARS **308** and the destination node **1706**.

As an example, consider the situation where a recording company contracts with a retail outlet store having a web page that resides at the destination node **1706** to control the user PC **1702** at the user location on the network. The recording company embeds a tone in the media to cause the user PC **1702** to connect to the retail outlet store destination node **1706** whenever that audible tone is transmitted from the recording media. For example, the retail outlet may be a video/music store that would desire certain specials or new releases to be relayed to a user at certain times during play of the recording media. The recording company can determine that a particular tone be embedded within an audio or video track on the media that is correlated with the destination node **1706** address of the retailer on the network **306**, and then transmit this tone at the appropriate time or at the appropriate point in the program. This need not be a specific time, or it can be a specific time in the program.

Therefore, the recording company can selectively control the user PC **1702** at a user location on the network **306** to connect to a desired destination node **1706** merely by injecting a tone into the recording media, or any other type of encoded information. This may be perceptible by the user or it may not be perceptible. Further, the embedded infor-

mation could cause an optical coupling between the user PC **1702** and the audio source **1700**, rather than an audio coupling means using both the audio transmitter **1612** and the audio receiver **1614**. It is only necessary that some code or information be embedded into the recording media and that there be some type of detector at the user's end to detect this information to then effect a connection over the network **306**. The implementation of the ARS **308** allows the recording company to initiate regular updates to the relational database **1704**. The updates may be new audio or video releases which are now linked in the relational database **1704** to the particular tone embedded in the recording media. In this way, the repeated use of the recording media by the user causes new information to be displayed to the user at the user PC **1702**, precluding the recording media from becoming "outdated."

In addition to being able to transmit the encoded information that is detected by the PC **1702** back to the ARS **308** from the user PC **1702**, a user ID in the user PC **1702** can be transmitted to the ARS **308**. The ARS **308** has contained therein a user profile database **1708** which is set up by the user when the software detection program is initially loaded, which user profile is associated with the user ID. This user profile information is optional, but can be utilized by the ARS **308** for multiple purposes. One of these purposes could be that the user profile information is appended to the routing information extracted from the relational database **1704** and forwarded back to the user PC **1702**. When the user PC **1702** and the browser program therein contact the destination node **1706**, the user profile information received from the ARS **308** is appended thereto. Therefore, the destination node **1706** will have information regarding the user that is contacting the destination node **1706**. The flexibility provided by the disclosed architecture is enormous in that the relational database **1704** may be structured to hold any amount of information related to the user such that play of the particular recording media at a particular moment in time triggers display of different information.

Referring now to FIG. **18**, there is illustrated a flowchart depicting the operation at the recording media architecture. The program is initiated at a block **1800** and then proceeds to a function block **1802** where the user inserts and plays the recording media. Flow is then to a function block **1804** where the audio extractor **1600** extracts the embedded tone signal from the audio/video signals of the recording media at the audio/video source **1700**. Flow is then to a function block **1806** where the audio extractor **1600** outputs the tone signal to the audio transmitter **1612**. Flow is then to a function block **1808** where the tone signal is received into the user PC **1702** by coupling the audible tone signal from the audio transmitter **1612** to the audio receiver **1614**. Flow is then to a function block **1810** where software running on the user PC **1702** assembles an intermediate node routing message packet. This intermediate routing message packet includes routing information of the intermediate node, the intermediate node in this particular disclosure being the ARS **308**. Additionally, the intermediate node routing message packet contains the tone signal or product identifier information decoded from the tone signal as extracted from the recording media. Flow is then to a function block **1812** where software running on the user PC **1702** launches a web browser for transmitting the intermediate node routing message packet across the network **306**.

Flow is then to a function block **1814** where the message packet is transmitted to the intermediate node (ARS **308**). Flow is then to a function block **1816** where a matching process occurs wherein the tone signal or decoded product information is obtained from the message packet and matched with corresponding tone signal information residing on the relational database **1704**. Flow is then to a decision block **1818** where the matching process is performed and if a match does not occur, flow is out the "N" path to a function block **1820** where a message is returned to the user indicating that the match was unsuccessful. If a match does occur, flow is out the "Y" path to a function block **1822** where a destination node message packet is assembled with routing information of the destination node corresponding to the tone signal. Flow is then to a function block **1824** where this destination node message packet having routing information of the destination node is transmitted back to the user PC **1702**. Flow is then to a function block **1826** where the user PC **1702** is then redirected to connect to the destination node **1706**. Flow is then to a function block **1828** where the destination node **1706** then returns information for display to the user PC **1702** corresponding to the tone signal information provided in the destination node message packet. Flow is then to an end point **1830** where the program terminates.

In summary, there is provided a method for allowing a user PC to be controlled in order to effect a connection between the user PC and a destination node on a network. This is facilitated through an audio source such as recording media having an embedded audio signal therein. When the recording media is played, the audio signal is extracted by an audio extractor and transmitted to the user PC, and detected by a program running in the background of the user PC. Once the audible tone is detected, a web browser is launched and the tone or decoded product identifier information associated with the tone is transmitted to an ARS on the network. The ARS then compares the information received from the user PC using information from a relational database. The relational database contains routing information for various destination nodes on the network. When a match occurs, the matching information is then forwarded back to the user PC and this is utilized to route the user PC to the particular destination node corresponding to the audible tone for the display of information therefrom.

Although the preferred embodiment has been described in detail, it should be understood that various changes, substitutions and alterations can be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A method for controlling a computer with recorded information of a digital audio tape, comprising;

embedding a unique code in the recorded audio information of the digital audio tape, the unique code in close association with vendor information;

extracting the unique code with an extractor during output of the recorded audio information to a user at a user location disposed on a network;

in response to extracting the unique code, transmitting the unique code to a remote location on the network in accordance with routing information stored at the user location and associated with an intermediate location on the network wherein the step of transmitting to the remote location further includes the steps of:

transmitting the unique code to the intermediate location;

accessing a database of vendor routing information in response to receiving at the intermediate location the transmitted unique code from the user location, the database providing an association between the

unique code and a remote vendor information location on the network, there being a plurality of such vendor routing information stored in the database;

comparing the received unique code with the stored vendor routing information in the database;

if there is a match between the received unique code and any of the stored vendor routing information, transmitting the matching vendor routing information back to the user location; and

in response to receiving the matching vendor routing information at the user location, interconnecting the user location with the vendor information location over the network and receiving vendor information therefrom, wherein the information is returned to the user location for processing.

2. The method of claim 1, wherein the user location further includes user ID information that uniquely identifies the user location, and

wherein the database at the intermediate node includes user profile information which is associated therein with the user ID information of the user location, and

wherein the step of transmitting the unique code over the network to the intermediate node also includes transmitting the user ID information to the intermediate location, and the step of matching further comprises matching the received user ID information of the user location with stored profile information associated with the received user ID information, and

wherein the step of transmitting the matching vendor routing information back to the user location further includes appending to the vendor routing information the stored profile information, and

wherein the stored profile information is transmitted to the remote vendor information location via the user location.

3. The method of claim 1, wherein the network is a global communication network that provides a universal resource locator (URL) for each location on the network and the routing information is comprised of the URL for the location.

4. The method of claim 1, wherein the unique code is an audible tone.

5. A method for controlling a computer with recorded information of a digital audio tape, comprising:

embedding a unique code in recorded information, the unique code in close association with vendor information;

extracting the unique code with an extractor during output of the recorded information to a user at a user location disposed on a network;

in response to extracting the unique code, transmitting the unique code to an intermediate location disposed on the network in accordance with routing information of the intermediate location stored at the user location;

performing a matching operation at the intermediate location with the unique code to return to the user location matching vendor routing information of a remote vendor information location disposed on the network, the remote vendor information location having the vendor information; and

accessing the remote vendor information location from the user location in accordance with the routing information of the remote vendor information location to return the vendor information for processing.

6. The method of claim 5, further comprising the steps of:

accessing a database of vendor routing information in response to receiving at the intermediate location the transmitted unique code from the user location, the database providing an association between the unique code and the remote vendor information location on the network, there being a plurality of such vendor routing information stored in the database; and

in response to receiving the matching vendor routing information at the user location, interconnecting the user location with the remote vendor information location over the network and receiving the vendor information therefrom.

7. The method of claim 6, wherein the user location further includes user ID information that uniquely identifies the user location, and

wherein the database at the intermediate node includes user profile information which is associated therein with the user ID information of the user location, and

wherein the step of transmitting the unique code over the network to the intermediate node also includes transmitting the user ID information to the intermediate location, and the step of matching further comprises matching the received user ID information of the user location with stored profile information associated with the received user ID information, and

wherein the step of transmitting the matching vendor routing information back to the user location further includes appending to the vendor routing information the stored profile information, and

wherein the stored profile information is transmitted to the remote vendor information location via the user location.

8. The method of claim 5, wherein the network is a global communication network that provides a universal resource locator (URL) for each location on the network and the routing information is comprised of the URL for the location.

9. The method of claim 5, wherein the unique code is an audible tone.

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Philyaw et al.

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(45) **Date of Patent: Sep. 2, 2003**

(54) **METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF DAT MEDIA**

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(52) **U.S. Cl.** **709/229**; 709/217; 709/238
(58) **Field of Search** 709/200, 201, 709/203, 217, 218, 219, 220, 223, 224, 227, 228, 231, 238, 245, 229

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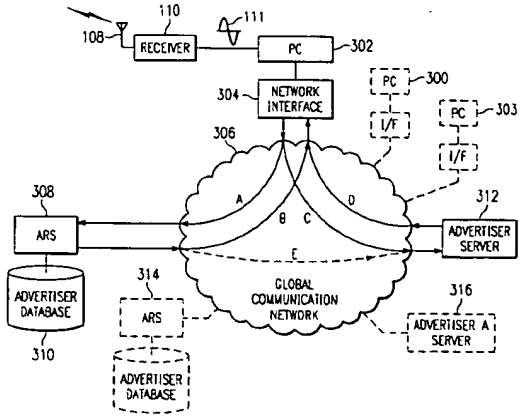
(57) **ABSTRACT**

A method for allowing a user PC to be controlled in order to effect a connection between the user PC and a destination node on a network. This is facilitated through an audio source wherein a digital audio tape recording media having embedded therein an audio signal therein. When the recording media is played, the audio signal is extracted by an audio extractor and transmitted to the user PC, and detected by a program running in the background of the user PC. Once the audible tone is detected, a web browser is launched and the tone or decoded product identifier information associated with the tone is transmitted to an ARS on the network. The ARS then compares the information received from the user PC using information from a relational database. The relational database contains routing information for various destination nodes on the network. When a match occurs, the matching information is then forwarded back to the user PC and this is utilized to route the user PC to the particular destination node corresponding to the audible tone for the processing of information received therefrom.

9 Claims, 8 Drawing Sheets



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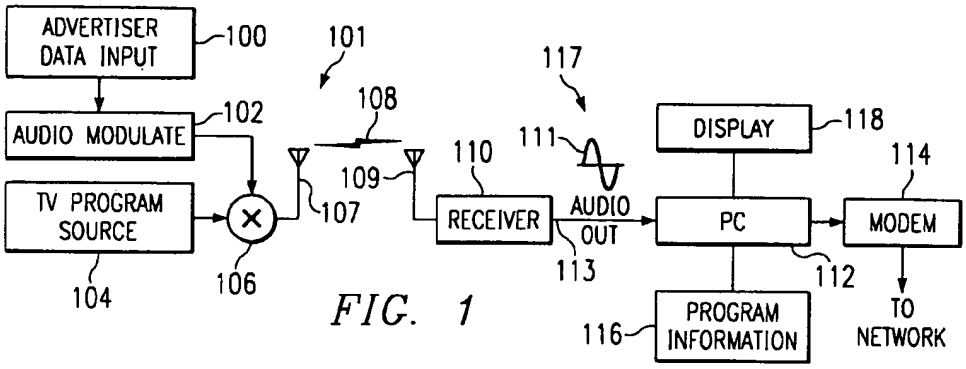


FIG. 1

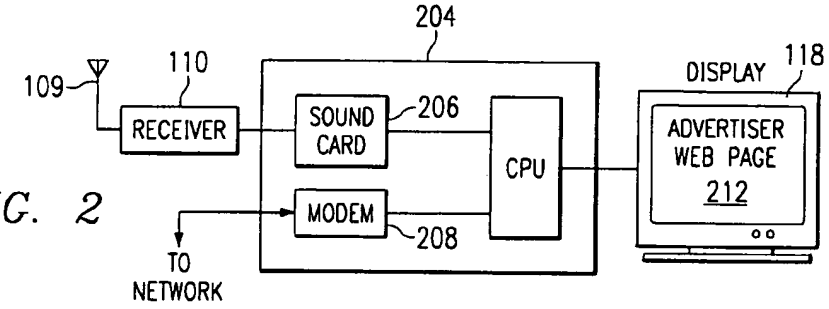


FIG. 2

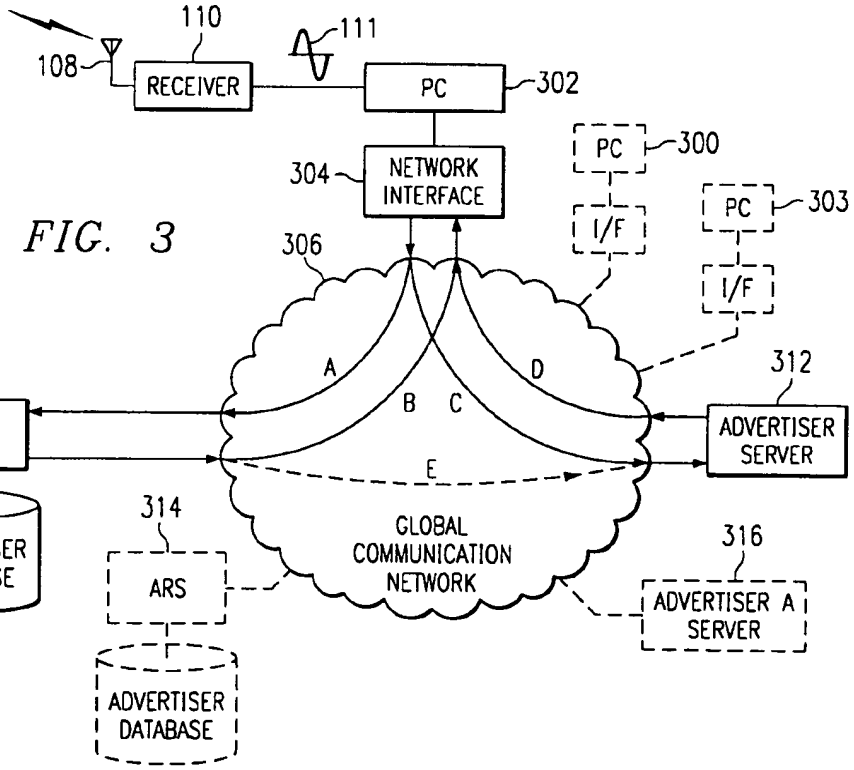


FIG. 3

PATH A: SOURCE TO ARS

FIG. 4a

PATH B: ARS TO SOURCE

FIG. 4b

PATH C: SOURCE TO ADVERTISER

FIG. 4c

PATH D: ADVERTISER TO SOURCE

FIG. 4d

PATH E: ARS TO ADVERTISER (OPTIONAL)

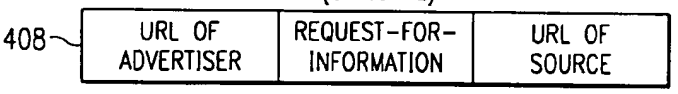


FIG. 4e

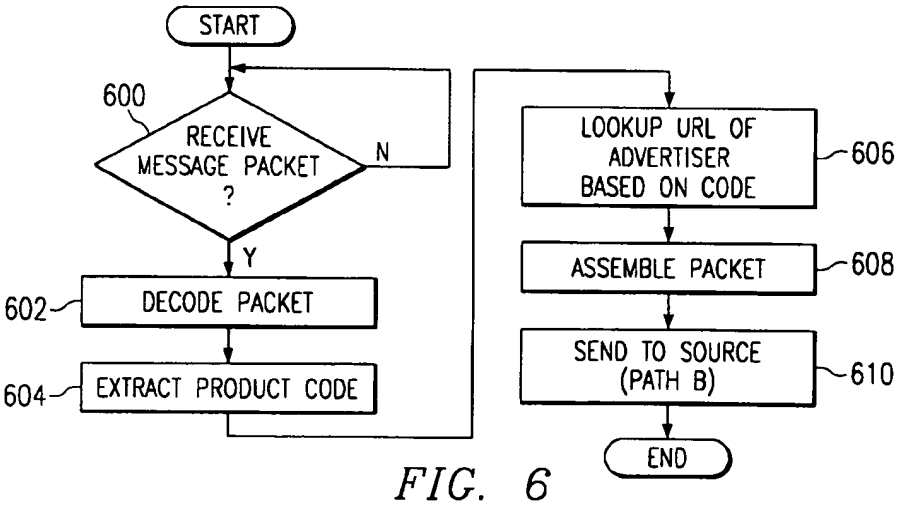


FIG. 6

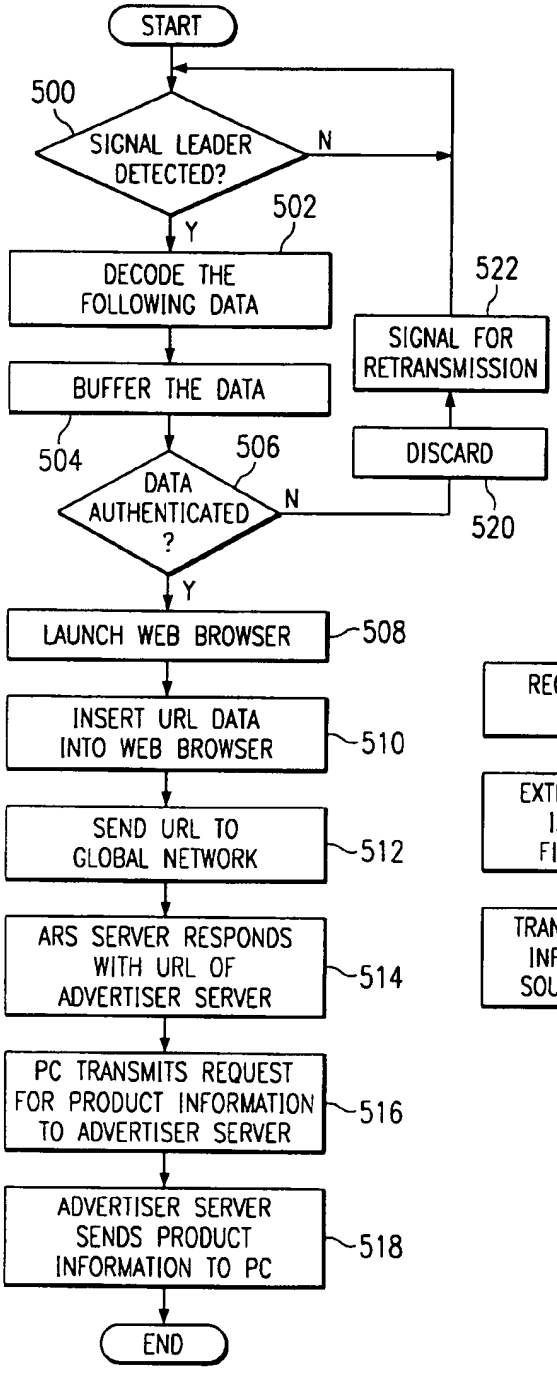

START
500
SIGNAL LEADER DETECTED?
N
Y
502
DECODE THE FOLLOWING DATA
BUFFER THE DATA
504
506
DATA AUTHENTICATED ?
N
Y
522
SIGNAL FOR RETRANSMISSION
DISCARD
520
LAUNCH WEB BROWSER
508
INSERT URL DATA INTO WEB BROWSER
510
SEND URL TO GLOBAL NETWORK
512
ARS SERVER RESPONDS WITH URL OF ADVERTISER SERVER
514
PC TRANSMITS REQUEST FOR PRODUCT INFORMATION TO ADVERTISER SERVER
516
ADVERTISER SERVER SENDS PRODUCT INFORMATION TO PC
518
END

FIG. 5

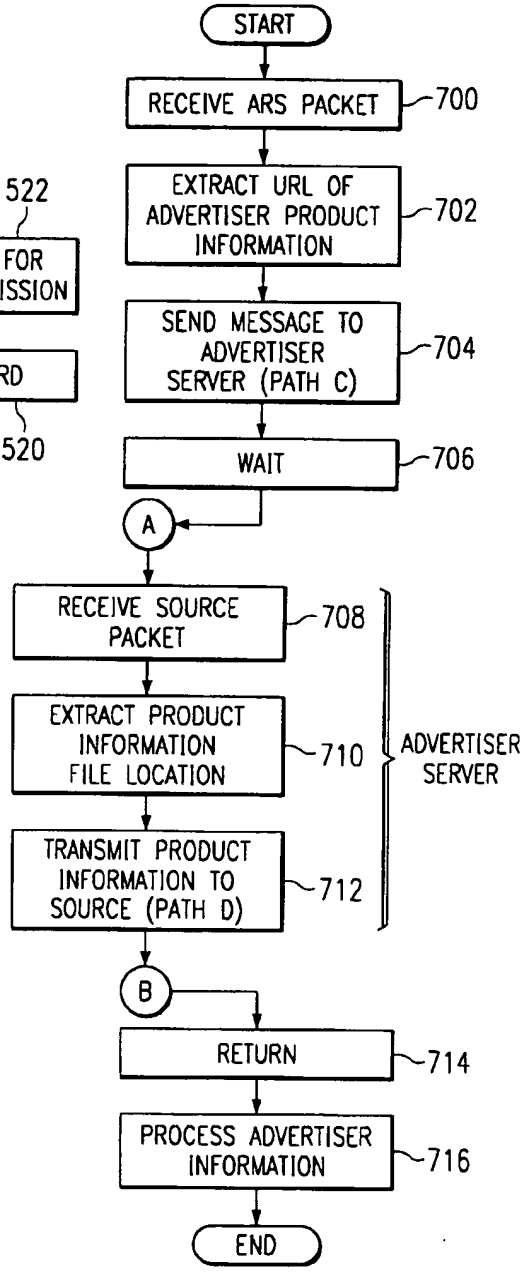
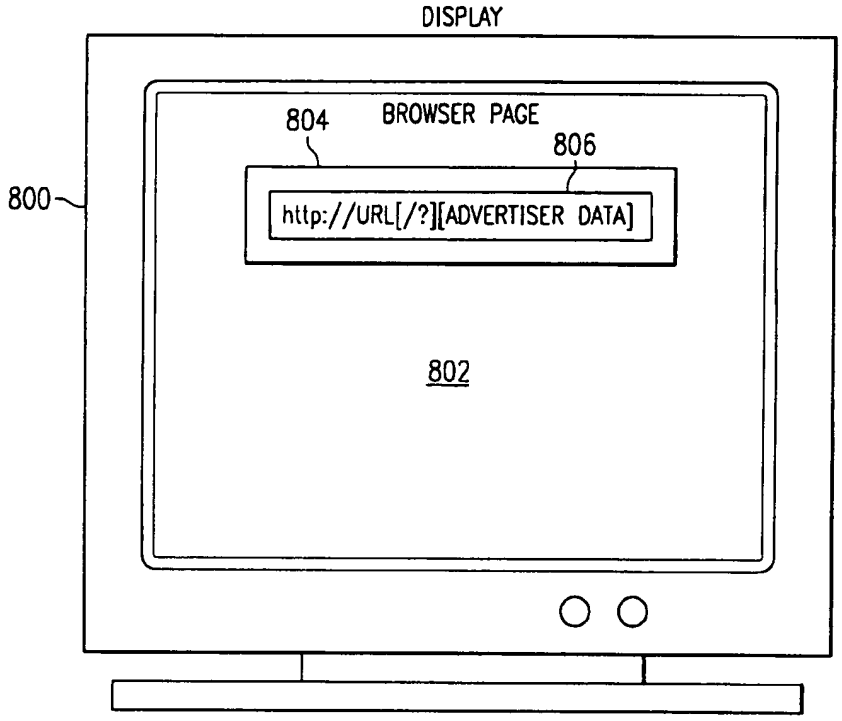

START
RECEIVE ARS PACKET
700
EXTRACT URL OF ADVERTISER PRODUCT INFORMATION
702
SEND MESSAGE TO ADVERTISER SERVER (PATH C)
704
WAIT
706
A
RECEIVE SOURCE PACKET
708
EXTRACT PRODUCT INFORMATION FILE LOCATION
710
TRANSMIT PRODUCT INFORMATION TO SOURCE (PATH D)
712
ADVERTISER SERVER
B
RETURN
714
PROCESS ADVERTISER INFORMATION
716
END

FIG. 7


DISPLAY
800
804
BROWSER PAGE
806
http://URL[/?][ADVERTISER DATA]
802

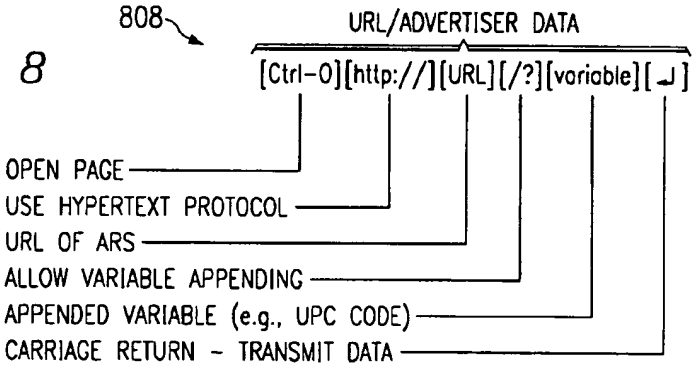

808
URL/ADVERTISER DATA
[Ctrl-O][http://][URL][/?][variable][↵]
OPEN PAGE
USE HYPERTEXT PROTOCOL
URL OF ARS
ALLOW VARIABLE APPENDING
APPENDED VARIABLE (e.g., UPC CODE)
CARRIAGE RETURN - TRANSMIT DATA

FIG. 8

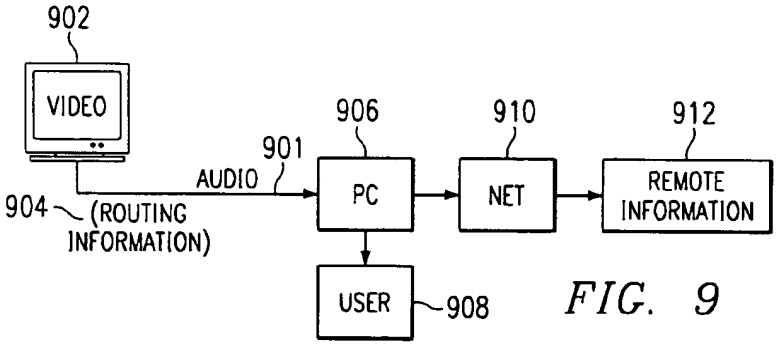

902
VIDEO
906
910
912
901
AUDIO
PC
NET
REMOTE INFORMATION
904
(ROUTING INFORMATION)
USER
908

FIG. 9

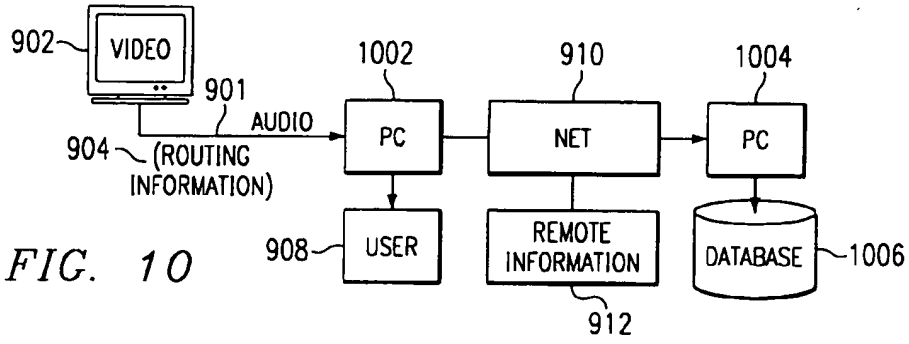


FIG. 10

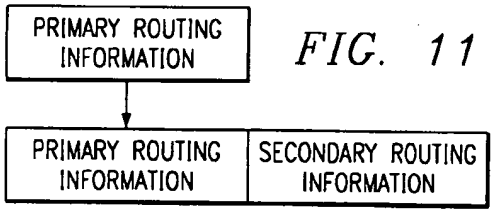


FIG. 11

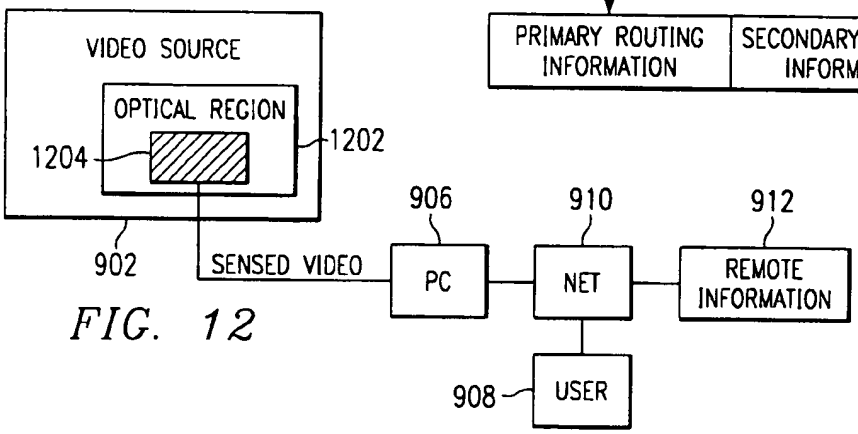


FIG. 12

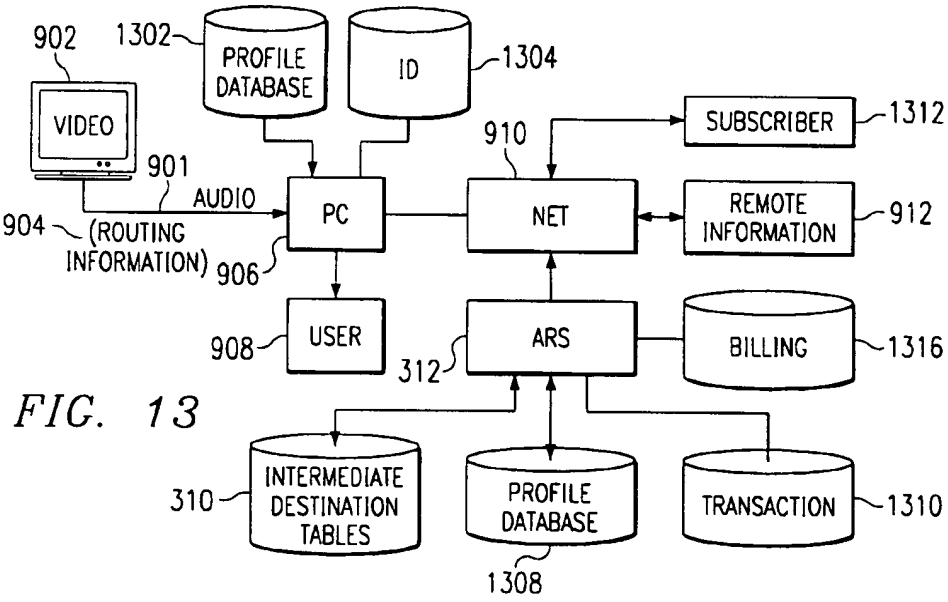


FIG. 13

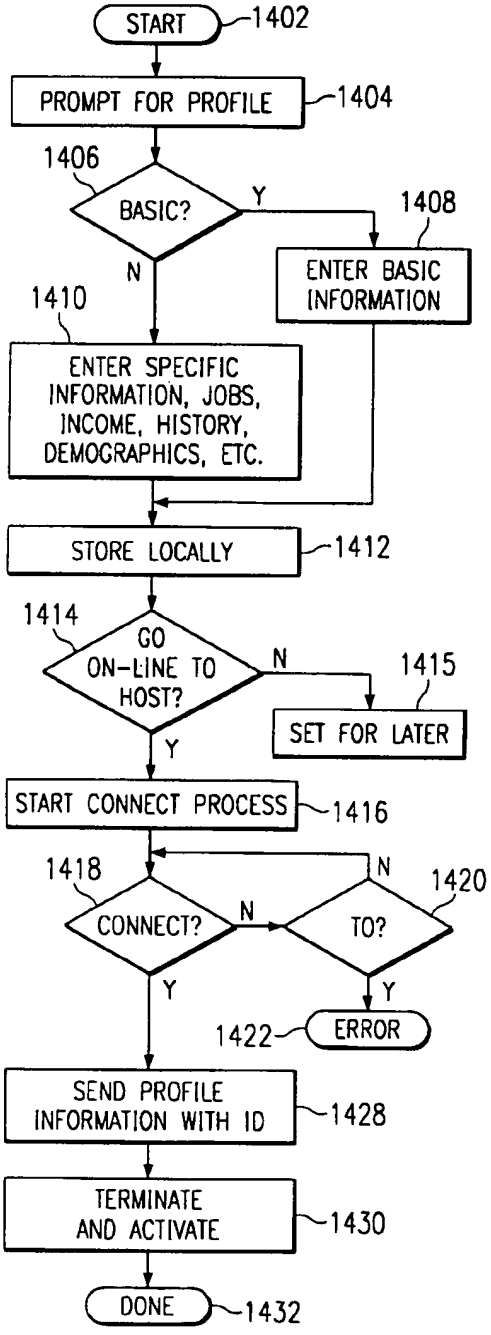

START
1402
PROMPT FOR PROFILE
1404
1406
BASIC?
Y
1408
ENTER BASIC INFORMATION
N
1410
ENTER SPECIFIC INFORMATION, JOBS, INCOME, HISTORY, DEMOGRAPHICS, ETC.
STORE LOCALLY
1412
1414
GO ON-LINE TO HOST?
N
1415
SET FOR LATER
Y
START CONNECT PROCESS
1416
1418
CONNECT?
N
1420
TO?
N
Y
Y
1422
ERROR
SEND PROFILE INFORMATION WITH ID
1428
TERMINATE AND ACTIVATE
1430
DONE
1432

FIG. 14

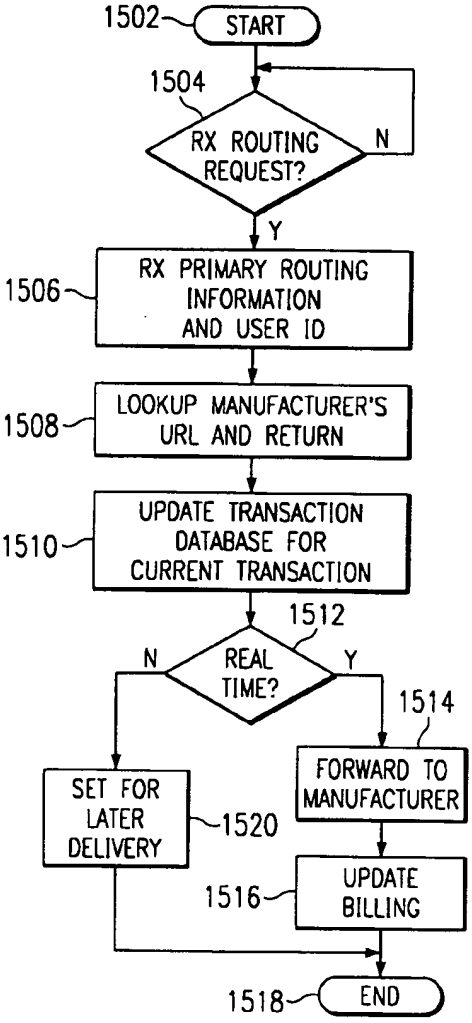

1502
START
1504
RX ROUTING REQUEST?
N
Y
1506
RX PRIMARY ROUTING INFORMATION AND USER ID
1508
LOOKUP MANUFACTURER'S URL AND RETURN
1510
UPDATE TRANSACTION DATABASE FOR CURRENT TRANSACTION
1512
REAL TIME?
N
Y
1514
FORWARD TO MANUFACTURER
SET FOR LATER DELIVERY
1520
1516
UPDATE BILLING
1518
END

FIG. 15

FIG. 16

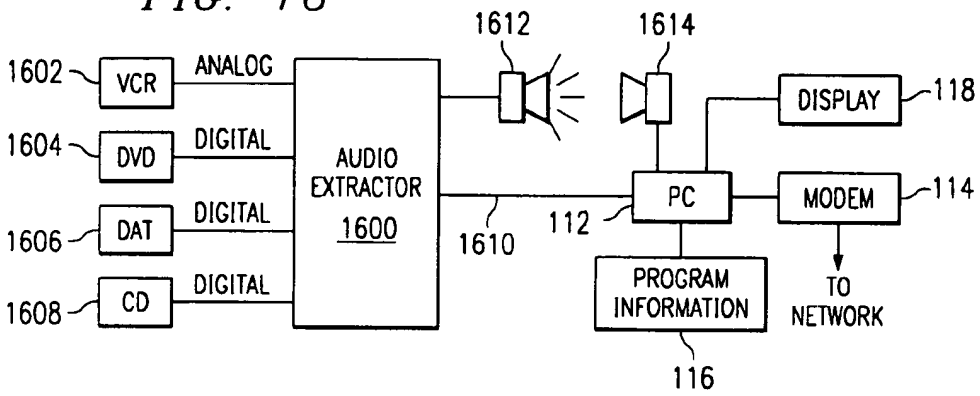
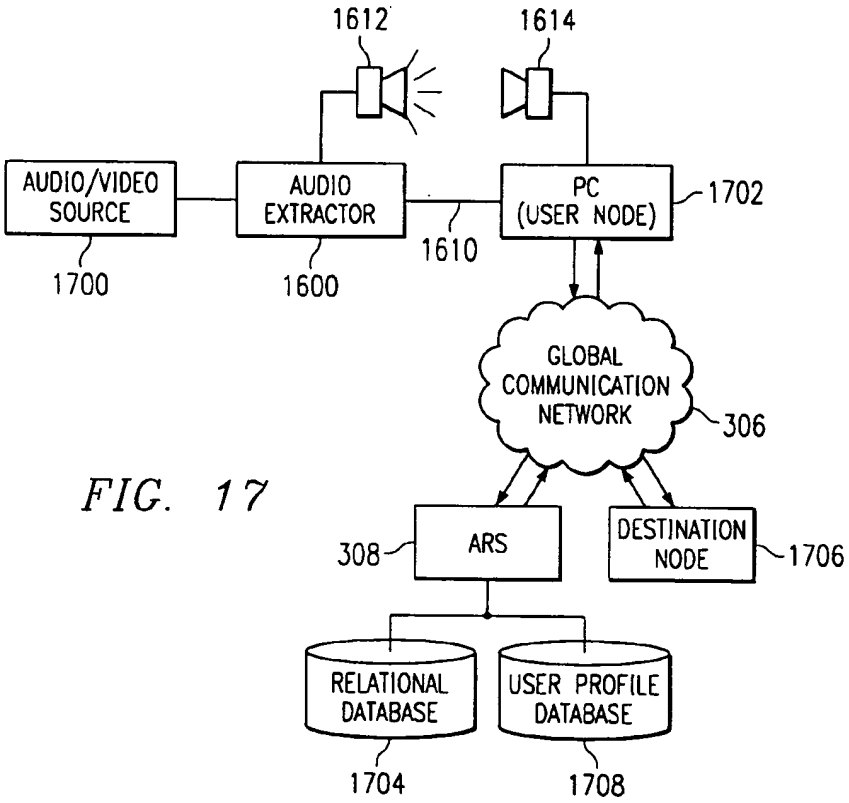

1612
1614
1602
VCR
ANALOG
1604
DVD
DIGITAL
1606
DAT
DIGITAL
1608
CD
DIGITAL
AUDIO EXTRACTOR 1600
1610
112
PC
DISPLAY
118
MODEM
114
PROGRAM INFORMATION
TO NETWORK
116

FIG. 17


1612
1614
AUDIO/VIDEO SOURCE
1700
AUDIO EXTRACTOR
1600
1610
PC (USER NODE)
1702
GLOBAL COMMUNICATION NETWORK
306
308
ARS
DESTINATION NODE
1706
RELATIONAL DATABASE
1704
USER PROFILE DATABASE
1708

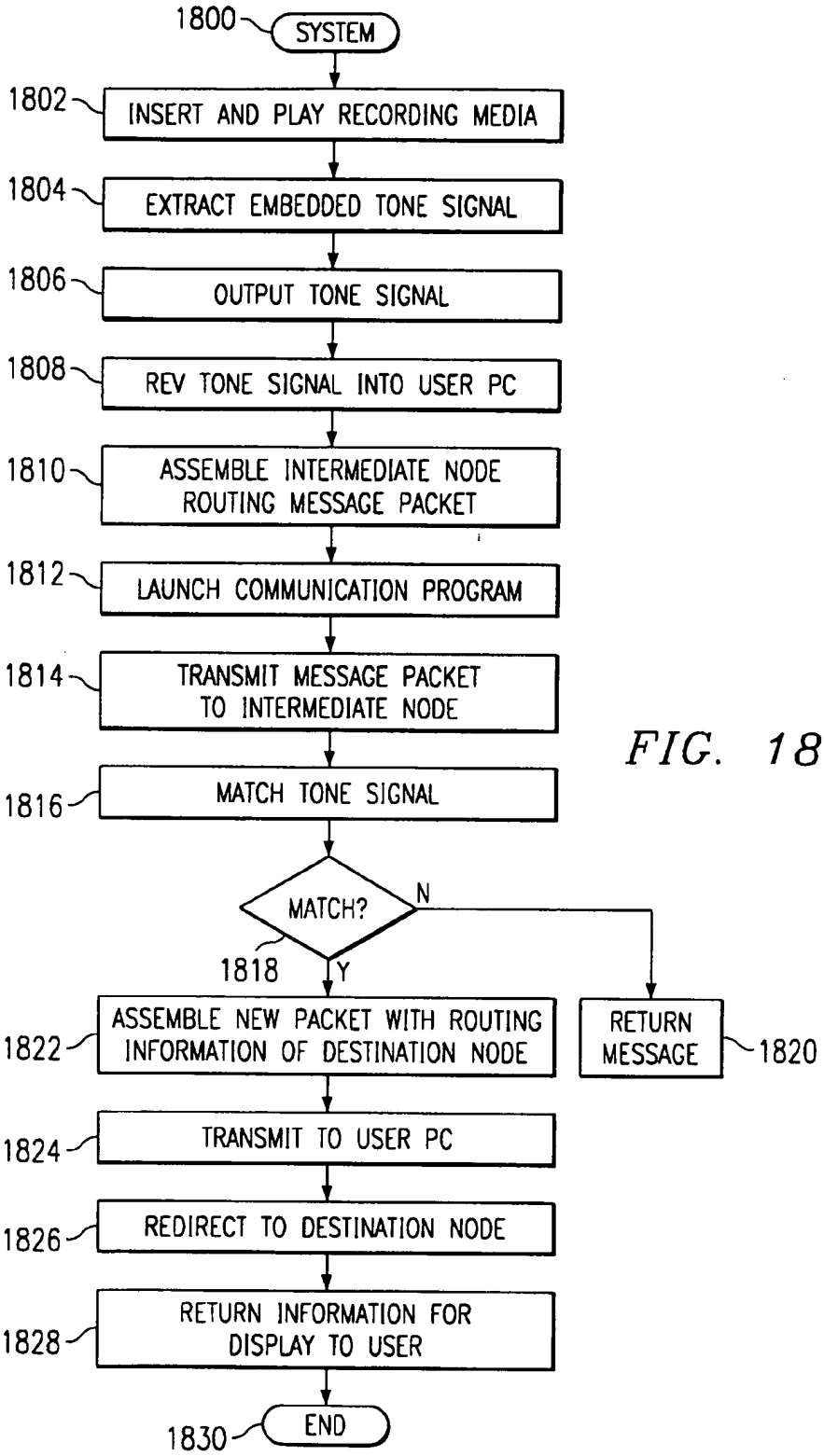

1800
SYSTEM
1802
INSERT AND PLAY RECORDING MEDIA
1804
EXTRACT EMBEDDED TONE SIGNAL
1806
OUTPUT TONE SIGNAL
1808
REV TONE SIGNAL INTO USER PC
1810
ASSEMBLE INTERMEDIATE NODE ROUTING MESSAGE PACKET
1812
LAUNCH COMMUNICATION PROGRAM
1814
TRANSMIT MESSAGE PACKET TO INTERMEDIATE NODE
1816
MATCH TONE SIGNAL
MATCH?
1818
N
Y
1820
RETURN MESSAGE
1822
ASSEMBLE NEW PACKET WITH ROUTING INFORMATION OF DESTINATION NODE
1824
TRANSMIT TO USER PC
1826
REDIRECT TO DESTINATION NODE
1828
RETURN INFORMATION FOR DISPLAY TO USER
1830
END

FIG. 18

METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF DAT MEDIA

CROSS REFERENCE TO RELATED APPLICATION

This application is a Continuation-in-part of U.S. patent application Ser. No. 09/151,530 entitled "METHOD AND APPARATUS FOR CONTROLLING A COMPUTER WITH AN AUDIO SIGNAL" filed Sep. 11, 1998, and which issued on Aug. 1, 2000 as U.S. Pat. No. 6,098,106; and is related to the following U.S. patent application Ser. No. 09/151,471 entitled "METHOD FOR INTERFACING SCANNED PRODUCT INFORMATION WITH A SOURCE FOR THE PRODUCT OVER A GLOBAL NETWORK" filed Sep. 11, 1998, now abandoned; Ser. No. 09/378,222 entitled "METHOD AND APPARATUS FOR EMBEDDING ROUTING INFORMATION TO A REMOTE WEB SITE IN AN AUDIO/VIDEO TRACK" filed on Aug. 19, 1999, still pending; Ser. No. 09/378,220 entitled "METHOD AND APPARATUS FOR CONTROLLING A COMPUTER FROM A REMOTE LOCATION" filed on Aug. 19, 1999, still pending; Ser. No. 09/378,216 entitled "METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF VIDEO TAPE MEDIA" filed on Aug. 19, 1999, still pending; Ser. No. 09/378,218 entitled "METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF DVD MEDIA" filed on Aug. 19, 1999, abandoned; and Ser. No. 09/378,217 entitled "METHOD FOR CONTROLLING A COMPUTER USING AN EMBEDDED UNIQUE CODE IN THE CONTENT OF CD MEDIA" filed on Aug. 19, 1999, still pending.

TECHNICAL FIELD OF THE INVENTION

This invention is related to a method of computer control, and particularly for automatically directing a web browser application on the computer to retrieve and display information in response to an analog signal.

BACKGROUND OF THE INVENTION

With the growing numbers of computer users connecting to the "Internet," many companies are seeking the substantial commercial opportunities presented by such a large user base. For example, one technology which exists allows a television ("TV") signal to trigger a computer response in which the consumer will be guided to a personalized web page. The source of the triggering signal may be a TV, video tape recorder, or radio. For example, if a viewer is watching a TV program in which an advertiser offers viewer voting, the advertiser may transmit a unique signal within the television signal which controls a program known as a "browser" on the viewer's computer to automatically display the advertiser's web page. The viewer then simply makes a selection which is then transmitted back to the advertiser.

In order to provide the viewer with the capability of responding to a wide variety of companies using this technology, a database of company information and Uniform Resource Locator ("URL") codes is necessarily maintained in the viewer's computer, requiring continuous updates. URLs are short strings of data that identify resources on the Internet: documents, images, downloadable files, services, electronic mailboxes, and other resources.

URLs make resources available under a variety of naming schemes and access methods such as HTTP, FTP, and Internet mail, addressable in the same simple way. URLs reduce the tedium of "login to this server, then issue this magic command . . . " down to a single click. The Internet uses URLs to specify the location of files on other servers. A URL includes the type of resource being accessed (e.g., Web, gopher, FTP), the address of the server, and the location of the file. The URL can point to any file on any networked computer. Current technology requires the viewer to perform periodic updates to obtain the most current URL database. This aspect of the current technology is cumbersome since the update process requires downloading information to the viewer's computer. Moreover, the likelihood for error in performing the update, and the necessity of redoing the update in the event of a later computer crash, further complicates the process. Additionally, current technologies are limited in the number of companies which may be stored in the database. This is a significant limitation since world-wide access presented by the Internet and the increasing number of companies connecting to perform on-line commerce necessitates a large database.

SUMMARY OF THE INVENTION

The present invention disclosed and claimed herein comprises a method for controlling a computer via a unique code which is embedded in the content of recorded information of a digital audio tape. The unique code in close association with vendor information. The unique code is extracted with an extractor during output of the recorded information to a user at a user location disposed on a network. In response to extracting the unique code, the unique code is transmitted to a remote location on the network in accordance with routing information stored at the user location, wherein the vendor information is returned to the user location for processing.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying Drawings in which:

FIG. **1** illustrates a block diagram of the preferred embodiment;

FIG. **2** illustrates the computer components employed in this embodiment;

FIG. **3** illustrates system interactions over a global network;

FIGS. **4***a*–**4***e* illustrate the various message packets transmitted between the source PC and network servers used in the preferred embodiment;

FIG. **5** is a flowchart depicting operation of the system according to the preferred embodiment;

FIG. **6** illustrates a flowchart of actions taken by the Advertiser Reference Server ("ARS") server;

FIG. **7** illustrates a flowchart of the interactive process between the source computer and ARS;

FIG. **8** illustrates a web browser page receiving the modified URL/advertiser product data according to the preferred embodiment;

FIG. **9** illustrates a simplified block diagram of the disclosed embodiment;

FIG. **10** illustrates a more detailed, simplified block diagram of the embodiment of FIG. **9**;

FIG. 11 illustrates a diagrammatic view of a method for performing the routing operation;

FIG. 12 illustrates a block diagram of an alternate embodiment utilizing an optical region in the video image for generating the routing information;

FIG. 13 illustrates a block diagram illustrating the generation of a profile with the disclosed embodiment;

FIG. 14 illustrates a flowchart for generating the profile and storing at the ARS;

FIG. 15 illustrates a flowchart for processing the profile information when information is routed to a user;

FIG. 16 illustrates a block diagram according to an alternative embodiment;

FIG. 17 illustrates a diagrammatic view of the interconnection with the network in the disclosure of FIG. 16; and

FIG. 18 illustrates a flowchart depicting the operation at the recording media architecture.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIG. 1, there is illustrated a block diagram of a system for controlling a personal computer ("PC") **112** via an audio tone transmitted over a wireless system utilizing a TV. In the embodiment illustrated in FIG. 1, there is provided a transmission station **101** and a receive station **117** that are connected via a communication link **108**. The transmission station **101** is comprised of a television program source **104**, which is operable to generate a program in the form of a broadcast signal comprised of video and audio. This is transmitted via conventional techniques along channels in the appropriate frequencies. The program source is input to a mixing device **106**, which mixing device is operable to mix in an audio signal. This audio signal is derived from an audio source **100** which comprises a coded audio signal which is then modulated onto a carrier which is combined with the television program source **104**. This signal combining can be done at the audio level, or it can even be done at the RF level in the form of a different carrier. However, the preferred method is to merely sum the audio signal from the modulator **102** into the audio channel of the program that is generated by the television program source **104**. The output thereof is provided from the mixing device **106** in the form of broadcast signal to an antenna **107**, which transmits the information over the communication link **108** to an antenna **109** on the receive side.

On the receive side of the system, a conventional receiver **110**, such as a television is provided. This television provides a speaker output which provides the user with an audible signal. This is typically associated with the program. However, the receiver **110** in the disclosed embodiment, also provides an audio output jack, this being the type RCA jack. This jack is utilized to provide an audio output signal on a line **113** which is represented by an audio signal **111**. This line **113** provides all of the audio that is received over the communication link **108** to the PC **112** in the audio input port on the PC **112**. However, it should be understood that, although a direct connection is illustrated from the receiver **110** to the PC **112**, there actually could be a microphone pickup at the PC **112** which could pick the audio signal up. In the disclosed embodiment the audio signal generated by the advertiser data input device **100** is audible to the human ear and, therefore, can be heard by the user. Therefore, no special filters are needed to provide this audio to the PC **112**.

The PC **112** is operable to run programs thereon which typically are stored in a program file area **116**. These programs can be any type of programs such as word processing programs, application programs, etc. In the disclosed embodiment, the program that is utilized in the system is what is referred to as a "browser." The PC **112** runs a browser program to facilitate the access of information on the network, for example, a global communication network known as the "Internet" or the World-Wide-Web ("Web"). The browser is a hypertext-linked application used for accessing information. Hypertext is a term used to describe a particular organization of information within a data processing system, and its presentation to a user. It exploits the computer's ability to link together information from a wide variety of sources to provide the user with the ability to explore a particular topic. The traditional style of presentation used in books employs an organization of the information which is imposed upon it by limitations of the medium, namely fixed sized, sequential paper pages. Hypertext systems, however, use a large number of units of text or other types of data such as image information, graphical information, video information, or sound information, which can vary in size. A collection of such units of information is termed a hypertext document, or where the hypertext documents employ information other than text, hypermedia documents. Multimedia communications may use the Hypertext Transfer Protocol ("HTTP"), and files or formatted data may use the Hypertext Markup Language ("HTML"). This formatting language provides for a mingling of text, graphics, sound, video, and hypertext links by "tagging" a text document using HTML. Data encoded using HTML is often referred to as an "HTML document," an "HTML page," or a "home page." These documents and other Internet resources may be accessed across the network by means of a network addressing scheme which uses a locator referred to as a Uniform Resource Locator ("URL"), for example, "http://www.digital.com."

The Internet is one of the most utilized networks for interconnecting distributed computer systems and allows users of these computer systems to exchange data all over the world. Connected to the Internet are many private networks, for example, corporate or commercial networks. Standard protocols, such as the Transport Control Protocol ("TCP") and the Internet Protocol ("IP") provide a convenient method for communicating across these diverse networks. These protocols dictate how data are formatted and communicated. As a characteristic of the Internet, the protocols are layered in an IP stack. At higher levels of the IP stack, such as the application layer (where HTTP is employed), the user information is more readily visible, while at lower levels, such as the network level (where TCP/IP are used), the data can merely be observed as packets or a stream of rapidly moving digital signals. Superimposed on the Internet is a standard protocol interface for accessing Web resources, such as servers, files, Web pages, mail messages, and the like. One way that Web resources can be accessed is by browsers made by Netscape® and Microsoft Internet Explorer®.

Referring again now to FIG. 1, the user can load this program with the appropriate keystrokes such that a browser window will be displayed on a display **118**. In one embodiment, the user can run the browser program on the PC **112** such that the browser window is displayed on the display **118**. While watching a preferred program, the user can also view display **118**. When an audio signal is received by the receiver **110** and the encoded information is contained therein that was input thereto by the advertiser, the PC **112** will then perform a number of operations. The first operation, according to the disclosed embodiment, is to

extract the audio information within the received audio signal in the form of digital data, and then transmit this digital data to a defined location on the global communication network via a modem connection **114**. This connection will be described hereinbelow. This information will be relayed to a proprietary location and the instructions sent back to the PC **112** as to the location of the advertiser associated with the code, and the PC **112** will then effect a communication link to that location such that the user can view on the display **118** information that the advertiser, by the fact of putting the tone onto the broadcast channel, desires the viewer to view. This information can be in the form of interactive programs, data files, etc. In one example, when an advertisement appears on the television, the tone can be generated and then additional data displayed on the display **118**. Additionally, a streaming video program could be played on the PC received over the network, which streaming video program is actually longer than the advertising segment on the broadcast. Another example would be a sports game that would broadcast the tone in order to allow a user access to information that is not available over the broadcast network, such as additional statistics associated with the sports program, etc.

By utilizing the system described herein with respect to the disclosed embodiment of FIG. **1**, an advertiser is allowed the ability to control a user's PC **112** through the use of tones embedded within a program audio signal. As will described hereinbelow, the disclosed embodiment utilizes particular routing information stored in the PC **112** which allows the encoded information in the received audio signal to route this information to a desired location on the network, and then allow other routing information to be returned to the PC **112** for control thereof to route the PC **112** to the appropriate location associated with that code.

Referring now to FIG. **2**, there is illustrated a computer **204**, similar to computer **112**, connected to display information on display **118**. The computer **204** comprises an internal audio or "sound" card **206** for receiving the transmitted audio signal through receive antenna **109** and receiver **110**. The sound card **206** typically contains analog-to-digital circuitry for converting the analog audio signal into a digital signal. The digital signal may then be more easily manipulated by software programs. The receiver **110** separates the audio signal from the video signal. A special trigger signal located within the transmitted advertiser audio signal triggers proprietary software running on the computer **204** which launches a communication application, in this particular embodiment, the web browser application located on the PC **204**. Coded advertiser information contained within the audio signal is then extracted and appended with the address of a proprietary server located on the communication network. The remote server address is in the form of a URL. This appended data, in addition to other control codes, is inserted directly into the web browser application for automatic routing to the communication network. The web browser running on PC **204**, and communicating to the network with an internal modem **208**, in this embodiment, transmits the advertiser information to the remote server. The remote server cross-references the advertiser product information to the address of the advertiser server located on the network. The address of the advertiser server is routed back through the PC **204** web browser to the advertiser server. The advertiser product information is returned to PC **204** to be presented to the viewer on display **118**. In this particular embodiment, the particular advertiser product information displayed is contained within the advertiser's web page **212**. As mentioned above, the audio signal is audible to the human ear. Therefore the audio signal, as emitted from the TV speakers, may be input to the sound card **206** via a microphone. Furthermore, the audio signal need not be a real-time broadcast, but may be on video tapes, CDs, DVD, or other media which may be displayed at a later date. With the imminent implementation of high definition digital television, the audio signal output from the TV may also be digital. Therefore, direct input into a sound card for A/D purposes may not be necessary, but alternative interfacing techniques to accommodate digital-to-digital signal formats would apply.

Referring now to FIG. **3**, there is illustrated a source PC **302**, similar to PCs **204** and **112**, connected to a global communication network (GCN) **306** through an interface **304**. In this embodiment, the audio signal **111** is received by PC **302** through its sound card **206**. The audio signal **111** comprises a trigger signal which triggers proprietary software into launching a web browser application residing on the PC **302**. The audio signal **111** also comprises advertiser product information which is extracted and appended with URL information of an Advertiser Reference Server ("ARS") **308**. The ARS **308** is a system disposed on the network **306** that is defined as the location to which data in the audio signal **111** is to be routed. As such, data in the audio signal **111** will always be routed to the ARS **308**, since a URL is unique on the GCN **306**. Connected to the ARS **308** is a database **310** of product codes and associated manufacturer URLs. The database **310** undergoes a continual update process which is transparent to the user. As companies sign-on, i.e., subscribe, to this technology, manufacturer and product information is added to the database **310** without interrupting operation of the source PC **302** with frequent updates. When the advertiser server address URL is obtained from the ARS database **310**, it and the request for the particular advertiser product information are automatically routed back through the web browser on PC **302**, over to the respective advertiser server for retrieval of the advertiser product information to the PC **302**. Additionally, although the disclosed invention discusses a global communication network, the system is also applicable to LANs, WANs, and peer-to-peer network configurations. It should be noted that the disclosed architecture is not limited to a single source PC **302**, but may comprise a plurality of source PCs, e.g., PC **300** and PC **303**. Moreover, a plurality of ARS **308** systems and advertiser servers **312** may be implemented, e.g., ARS **314**, and advertiser server A **316**, respectively.

The information transactions, in general, which occur between the networked systems of this embodiment, over the communication network, are the following. The web browser running on source PC **302** transmits a message packet to the ARS **308** over Path "A." The ARS **308** decodes the message packet and performs a cross-reference function with product information extracted from the received message packet to obtain the address of an advertiser server **312**. A new message packet is assembled comprising the advertiser server **312** address, and sent back to the source PC **302** over Path "B." A "handoff" operation is performed whereby the source PC **302** browser simply reroutes the information on to the advertiser server **312** over Path "C," with the appropriate source and destination address appended. The advertiser server **312** receives and decodes the message packet. The request-for-advertiser-product-information is extracted and the advertiser **312** retrieves the requested information from its database for transmission back to the source PC **302** over Path "D." The source PC **302** then processes the information, i.e., for display to the viewer. The optional Path "E" is discussed hereinbelow. It should be

noted that the disclosed methods are not limited to only browser communication applications, but may accommodate, with sufficient modifications by one skilled in the art, other communication applications used to transmit information over the Internet or communication network.

Referring now to FIG. **4***a*, the message packet **400** sent from the source PC **302** to ARS **308** via Path "A" comprises several fields. One field comprises the URL of the ARS **308** which indicates where the message packet is to be sent. Another field comprises the advertiser product code or other information derived from the audio signal **111**, and any additional overhead information required for a given transaction. The product code provides a link to the address of the advertiser server **312**, located in the database **310**. Yet another field comprises the network address of the source PC **302**. In general, network transmissions are effected in packets of information, each packet providing a destination address, a source address, and data. These packets vary depending upon the network transmission protocol utilized for communication. Although the protocols utilized in the disclosed embodiment are of a conventional protocol suite commonly known as TCP/IP, it should be understood that any protocols providing the similar basic functions can be used, with the primary requirement that a browser can forward the routing information to the desired URL in response to keystrokes being input to a PC. However, it should be understood that any protocol can be used, with the primary requirement that a browser can forward the product information to the desired URL in response to keystrokes being input to a PC. Within the context of this disclosure, "message packet" shall refer to and comprise the destination URL, product information, and source address, even though more than a single packet must be transmitted to effect such a transmission.

Upon receipt of the message packet **400** from source PC **302**, ARS **308** processes the information in accordance with instructions embedded in the overhead information. The ARS **308** specifically will extract the product code information from the received packet **400** and, once extracted, will then decode this product code information. Once decoded, this information is then compared with data contained within the ARS advertiser database **310** to determine if there is a "hit." If there is no "hit" indicating a match, then information is returned to the browser indicating such. If there is a "hit," a packet **402** is assembled which comprises the address of the source PC **302**, and information instructing the source PC **302** as to how to access, directly in a "handoff" operation, another location on the network, that of an advertiser server **312**. This type of construction is relatively conventional with browsers such as Netscape® and Microsoft Internet Explorer® and, rather than displaying information from the ARS **308**, the source PC **302** can then access the advertiser server **312**. The ARS **308** transmits the packet **402** back to source PC **302** over Path "B." Referring now to FIG. **4***b*, the message packet **402** comprises the address of the source PC **302**, the URL of the advertiser server **312** embedded within instructional code, and the URL of the ARS **308**.

Upon receipt of the message packet **402** by the source PC **302**, the message packet **402** is disassembled to obtain pertinent routing information for assembly of a new message packet **404**. The web browser running on source PC **302** is now directed to obtain, over Path "C," the product information relevant to the particular advertiser server **312** location information embedded in message packet **404**. Referring now to FIG. **4***c*, the message packet **404** for this transaction comprises the URL of the advertiser server **312**, the request-for-product-information data, and the address of the source PC **302**.

Upon receipt of the message packet **404** from source PC **302**, advertiser server **312** disassembles the message packet **404** to obtain the request-for-product-information data. The advertiser server **312** then retrieves the particular product information from its database, and transmits it over Path "D" back to the source PC **302**. Referring now to FIG. **4***d*, the message packet **406** for this particular transaction comprises the address of the source PC **302**, the requested information, and the URL of the advertiser server **312**.

Optionally, the ARS **308** may make a direct request for product information over Path "E" to advertiser server **312**. In this mode, the ARS **308** sends information to the advertiser server **312** instructing it to contact the source PC **302**. This, however, is unconventional and requires more complex software control. The message packet **408** for this transaction is illustrated in FIG. **4***e*, which comprises the URL of the advertiser server **312**, the request-for-product-information data, and the address of the source PC **302**. Since product information is not being returned to the ARS **308**, but directly to the source PC **302**, the message packet **408** requires the return address to be that of the source PC **302**. The product information is then passed directly to PC **302** over Path "D."

Referring now to FIG. **5**, the method for detecting and obtaining product information is as follows. In decision block **500**, a proprietary application running resident on a source computer PC **302** (similar to PC **204**) monitors the audio input for a special trigger signal. Upon detection of the trigger signal, data following the trigger signal is decoded for further processing, in function block **502**. In function block **504**, the data is buffered for further manipulation. In decision block **506**, a determination is made as to whether the data can be properly authenticated. If not, program flow continues through the "N" signal to function block **520** where the data is discarded. In function block **522**, the program then signals for a retransmission of the data. The system then waits for the next trigger signal, in decision block **500**. If properly authenticated in decision block **506**, program flow continues through the "Y" signal path where the data is then used to launch the web browser application, as indicated in function block **508**. In function block **510**, the web browser receives the URL data, which is then automatically routed through the computer modem **208** to the network interface **304** and ultimately to the network **306**. In function block **514**, the ARS **308** responds by returning the URL of advertiser server **312** to the PC **302**. In function block **516**, the web browser running on the source PC **302**, receives the advertiser URL information from the ARS **308**, and transmits the URL for the product file to the advertiser server **312**. In block **518**, the advertiser server **312** responds by sending the product information to the source PC **302** for processing.

The user may obtain the benefits of this architecture by simply downloading the proprietary software over the network. Other methods for obtaining the software are well-known; for example, by CD, diskette, or pre-loaded hard drives.

Referring now to FIG. **6**, there is illustrated a flowchart of the process the ARS **308** may undergo when receiving the message packet **400** from the source PC **302**. In decision block **600**, the ARS **308** checks for the receipt of the message packet **400**. If a message packet **400** is not received, program flow moves along the "N" path to continue waiting for the message. If the message packet **400** is received, program flow continues along path "Y" for message processing. Upon receipt of the message packet **400**, in function block **602**, the ARS **308** decodes the message packet **400**.

The product code is then extracted independently in function block **604** in preparation for matching the product code with the appropriate advertiser server address located in the database **310**. In function block **606**, the product code is then used with a look-up table to retrieve the advertiser server **312** URL of the respective product information contained in the audio signal data. In function block **608**, the ARS **308** then assembles message packet **402** for transmission back to the source PC **302**. Function block **610** indicates the process of sending the message packet **402** back to the source PC **302** over Path "B."

Referring now to FIG. **7**, there is illustrated a flowchart of the interactive processes between the source PC **302** and the advertiser server **312**. In function block **700**, the source PC **302** receives the message packet **402** back from the ARS **308** and begins to decode the packet **402**. In function block **702**, the URL of the advertiser product information is extracted from the message packet **402** and saved for insertion into the message packet **404** to the advertiser server **312**. The message packet **404** is then assembled and sent by the source PC **302** over Path "C" to the advertiser server **312**, in function block **704**. While the source PC **302** waits, in function block **706**, the advertiser server **312** receives the message packet **404** from the source PC **302**, in function block **708**, and disassembles it. The product information location is then extracted from the message packet **404** in function block **710**. The particular product information is retrieved from the advertiser server **312** database for transmission back to the source PC **302**. In function block **712**, the product information is assembled into message packet **406** and then transmitted back to the source PC **302** over Path "D." Returning to the source PC **302** in function block **714**, the advertiser product information contained in the message packet **406** received from the advertiser server **312**, is then extracted and processed in function block **716**.

Referring now to FIG. **8**, after receipt of a trigger signal, a web browser application on a source PC **302** is automatically launched and computer display **800** presents a browser page **802**. Proprietary software running on the source PC **302** processes the audio signal data after being digitized through the sound card **206**. The software appropriately prepares the data for insertion directly into the web browser by extracting the product information code and appending keystroke data to this information. First, a URL page **804** is opened in response to a Ctrl-O command added by the proprietary software as the first character string. Opening URL page **804** automatically positions the cursor in a field **806** where additional keystroke data following the Ctrl-O command will be inserted. After URL page **804** is opened, the hypertext protocol preamble http:// is inserted into the field **806**. Next, URL information associated with the location of the ARS **308** is inserted into field **806**. Following the ARS **308** URL data are the characters/? to allow entry of variables immediately following the/? characters. In this embodiment, the variable following is the product information code received in the audio signal. The product code information also provides the cross-reference information for obtaining the advertiser URL from the ARS database **310**. Next, a carriage return is added to send the URL/product data and close the window **804**. After the message packet **400** is transmitted to the ARS **308** from the source PC **302**, transactions from the ARS **308**, to the source PC **302**, to the advertiser server **312**, and back to the source PC **302**, occur quickly and are transparent to the viewer. At this point, the next information the viewer sees is the product information which was received from the advertiser server **312**.

Referring now to FIG. **9**, there is illustrated a block diagram of a more simplified embodiment. In this embodiment, a video source **902** is provided which is operable to provide an audio output on an audio cable **901** which provides routing information referred to by reference numeral **904**. The routing information **904** is basically information contained within the audio signal. This is an encoded or embedded signal. The important aspect of the routing information **904** is that it is automatically output in realtime as a function of the broadcast of the video program received over the video source **902**. Therefore, whenever the program is being broadcast in realtime to the user **908**, the routing information **904** will be output whenever the producer of the video desires it to be produced. It should be understood that the box **902** representing the video source could be any type of media that will result in the routing information being output. This could be a cassette player, a DVD player, an audio cassette, a CD ROM or any such media. It is only important that this is a program that the producer develops which the user **908** watches in a continuous or a streaming manner. Embedded within that program, at a desired point selected by the producer, the routing information **904** is output.

The audio information is then routed to a PC **906**, which is similar to the PC **112** in FIG. **1**. A user **908** is interfaced with the PC to receive information thereof, the PC **906** having associated therewith a display (not shown). The PC **906** is interfaced with a network **910**, similar to the network **306** in FIG. **3**. This network **910** has multiple nodes thereon, one of which is the PC **906**, and another of which is represented by a network node **912** which represents remote information. The object of the present embodiment is to access remote information for display to the user **908** by the act of transmitting from the video program in block **902** the routing information **904**. This routing information **904** is utilized to allow the PC **906** which has a network "browser" running thereon to "fetch" the remote information at the node **912** over the network **910** for display to the user **908**. This routing information **904** is in the form of an embedded code within the audio signal, as was described hereinabove.

Referring now to FIG. **10**, there is illustrated a more detailed block diagram of the embodiment of FIG. **9**. In this embodiment, the PC **906** is split up into a couple of nodes, a first PC **1002** and a second PC **1004**. The PC **1002** resides at the node associated with the user **908**, and the PC **1004** resides at another node. The PC **1004** represents the ARS **308** of FIG. **3**. The PC **1004** has a database **1006** associated therewith, which is basically the advertiser database **310**. Therefore, there are three nodes on the network **910** necessary to implement the disclosed embodiment, the PC **1002**, the PC **1004** and the remote information node **912**. The routing information **904** is utilized by the PC **1002** for routing to the PC **1004** to determine the location of the remote information node **912** on the network **910**. This is returned to the PC **1002** and a connection made directly with the remote information node **912** and the information retrieved therefrom to the user **908**. The routing information **904** basically constitutes primary routing information.

Referring now to FIG. **11**, there is illustrated a diagrammatic view of how the network packet is formed for sending the primary routing information to the PC **1004**. In general, the primary routing information occupies a single field which primary routing information is then assembled into a data packet with the secondary routing information for transfer to the network **910**. This is described hereinabove in detail.

Referring now to FIG. **12**, there is illustrated an alternate embodiment to that of FIG. **9**. In this embodiment, the video source **902** has associated therewith an optical region **1202**,

which optical region **1202** has disposed therein an embedded video code. This embedded video code could be relatively complex or as simple as a grid of dark and white regions, each region in the grid able to have a dark color for a logic "1" or a white region for a logic "0." This will allow a digital value to be disposed within the optical region **1202**. A sensor **1204** can then be provided for sensing this video code. In the example above, this would merely require an array of optical detectors, one for each region in the grid to determine whether this is a logic "1" or a logic "0" state. One of the sensed video is then output to the PC **906** for processing thereof to determine the information contained therein, which information contained therein constitutes the primary routing information **904**. Thereafter, it is processed as described hereinabove with reference to FIG. **9**.

Referring now to FIG. **13**, there is illustrated a block diagram for an embodiment wherein a user's profile can be forwarded to the original subscriber or manufacturer. The PC **906** has associated therewith a profile database **1302**, which profile database **1302** is operable to store a profile of the user **908**. This profile is created when the program, after initial installation, requests profile information to be input in order to activate the program. In addition to the profile, there is also a unique ID that is provided to the user **908** in association with the browser program that runs on the PC **906**. This is stored in a storage location represented by a block **1304**. This ID **1304** is accessible by a remote location as a "cookie" which is information that is stored in the PC **906** in an accessible location, which accessible location is actually accessible by the remote program running on a remote node.

The ARS **308**, which basically constitutes the PC **1004** of FIG. **10**, is operable to have associated therewith a profile database **1308**, which profile database **1308** is operable to store profiles for all of the users. The profile database **1308** is a combination of the information stored in profile database **1302** for all of the PCs **906** that are attachable to the system. This is to be distinguished from information stored in the database **310** of the ARS **308**, the advertiser's database, which contains intermediate destination tables. When the routing information in the primary routing information **904** is forwarded to the ARS **308** and extracted from the original data packet, the look-up procedure described hereinabove can then be performed to determine where this information is to be routed. The profile database **1302** is then utilized for each transaction, wherein each transaction in the form of the routing information received from the primary routing information **904** is compared to the destination tables of database **310** to determine what manufacturer is associated therewith. The associated ID **1304** that is transmitted along with the routing information in primary routing information **904** is then compared with the profile database **1308** to determine if a profile associated therewith is available. This information is stored in a transaction database **1310** such that, at a later time, for each routing code received in the form of the information in primary routing information **904**, there will associated therewith the IDs **1304** of each of the PCs **906**. The associated profiles in database **1308**, which are stored in association with IDs **1304**, can then be assembled and transmitted to a subscriber as referenced by a subscriber node **1312** on the network **910**. The ARS **308** can do this in two modes, a realtime mode or a non-realtime mode. In a realtime mode, each time a PC **906** accesses the advertiser database **310**, that user's profile information is uploaded to the subscriber node **1312**. At the same time, billing information is generated for that subscriber **1312** which is stored in a billing database **1316**. Therefore, the ARS **308** has the ability to inform the subscriber **1312** of each transaction, bill for those transactions, and also provide to the subscriber **1312** profile information regarding who is accessing the particular product advertisement having associated therewith the routing information field **904** for a particular routing code as described hereinabove. This information, once assembled, can then be transmitted to the subscriber **1312** and also be reflected in billing information and stored in the billing information database **1316**.

Referring now to FIG. **14**, there is illustrated a flowchart depicting the operation for storing the profile for the user. The program is initiated in a block **1402** and then proceeds to a function block **1404**, wherein the system will prompt for the profile upon initiation of the system. This initiation is a function that is set to activate whenever the user initially loads the software that he or she is provided. The purpose for this is to create, in addition to the setup information, a user profile. Once the user is prompted for this, then the program will flow to a decision block **1406** to determine whether the user provides basic or detailed information. This is selectable by the user. If selecting basic, the program will flow to a function block **1408** wherein the user will enter basic information such as name and serial number and possibly an address. However, to provide some incentive to the user to enter more information, the original prompt in function block **1404** would have offers for such things as coupons, discounts, etc., if the user will enter additional information. If the user selects this option, the program flows from the decision block **1406** to a function block **1410**. In the function block **1410**, the user is prompted to enter specific information such as job, income level, general family history, demographic information and more. There can be any amount of information collected in this particular function block.

Once all of the information is collected, in either the basic mode or the more specific mode, the program will then flow to a function block **1412** where this information is stored locally. The program then flows to a decision block **1414** to then go on-line to the host or the ARS **308**. In general, the user is prompted to determine whether he or she wants to send this information to the host at the present time or to send it later. If he or she selects the "later" option, the program will flow to a function block **1415** to prompt the user at a later time to send the information. In the disclosed embodiment, the user will not be able to utilize the software until the profile information is sent to the host. Therefore, the user may have to activate this at a later time in order to connect with the host.

If the user has selected the option to upload the profile information to the host, the program will flow to the function block **1416** to initiate the connect process and then to a decision block **1418** to determine if the connection has been made. If not, the program will flow along a "N" path to a decision block **1420** which will timeout to an error block **1422** or back to the input of the connect decision block **1418**. The program, once connected, will then flow along a "Y" path from decision block **1418** to a function block **1428** to send the profile information with the ID of the computer or user to the host. The ID is basically, as described hereinabove, a "cookie" in the computer which is accessed by the program when transmitting to the host. The program will then flow to a function block **1430** to activate the program such that it, at later time, can operate without requiring all of the setup information. In general, all of the operation of this flowchart is performed with a "wizard" which steps the user through the setup process. Once complete, the program will flow to a Done block **1432**.

Referring now to FIG. **15**, there is illustrated a flowchart depicting the operation of the host when receiving a transaction. The program is initiated at a Start block **1502** and then proceeds to decision block **1504**, wherein it is determined whether the system has received a routing request, i.e., the routing information **904** in the form of a tone, etc., embedded in the audio signal, as described hereinabove with respect to FIG. **9**. The program will loop back around to the input of decision block **1504** until the routing request has been received. At this time, the program will flow along the "Y" path to a function block **1506** to receive the primary routing information and the user ID. Essentially, this primary routing information is extracted from the audio tone, in addition to the user ID. The program then flows to a function block **1508** to look up the manufacturer URL that corresponds to the received primary routing information and then return the necessary command information to the originating PC **112** in order to allow that PC **112** to connect to the destination associated with the primary routing information. Thereafter, the program will flow to a function block **1510** to update the transaction database **1310** for the current transaction. In general, the routing information **904** will be stored as a single field with the associated IDs. The profile database **1308**, as described hereinabove, has associated therewith detailed profiles of each user on the system that has activated their software in association with their ID. Since the ID was sent in association with the routing information, what is stored in the transaction database **1310** is the routing code, in association with all of the IDs transmitted to the system in association with that particular routing code. Once this transaction database **1310** has been updated, as described hereinabove, the transactions can be transferred back to the subscriber at node **312** with the detailed profile information from the profile database **1308**.

The profile information can be transmitted back to the subscriber or manufacturer at the node **312** in realtime or non-realtime. A decision block **1512** is provided for this, which determines if the delivery is realtime. If realtime, the program will flow along a "Y" path to a function block **1514** wherein the information will be immediately forwarded to the manufacturer or subscriber. The program will then flow to a function block **1516** wherein the billing for that particular manufacturer or subscriber will be updated in the billing database **1316**. The program will then flow into an End block **1518**. If it was non-realtime, the program moves along the "N" path to a function block **1520** wherein it is set for a later delivery and it is accrued in the transaction database **1310**. In any event, the transaction database **1310** will accrue all information associated with a particular routing code.

With a realtime transaction, it is possible for a manufacturer to place an advertisement in a magazine or to place a product on a shelf at a particular time. The manufacturer can thereafter monitor the times when either the advertisements are or the products are purchased. Of course, they must be scanned into a computer which will provide some delay. However, the manufacturer can gain a very current view of how a product is moving. For example, if a cola manufacturer were to provide a promotional advertisement on, for example, television, indicating that a new cola was going to be placed on the shelf and that the first 1000 purchasers, for example, scanning their code into the network would receive some benefit, such as a chance to win a trip to some famous resort in Florida or some other incentive, the manufacturer would have a very good idea as to how well the advertisement was received. Further, the advertiser would know where the receptive markets were. If this advertiser, for example, had placed the television advertisement in ten cities and received overwhelming response from one city, but very poor response from another city, he would then have some inclination to believe that either the one poor-response city was not a good market or that the advertising medium he had chosen was very poor. Since the advertiser can obtain a relatively instant response and also content with that response as to the demographics of the responder, very important information can be obtained in a relatively short time.

It should be noted that the disclosed embodiment is not limited to a single source PC **302**, but may encompass a large number of source computers connected over a global communication network. Additionally, the embodiment is not limited to a single ARS **308** or a single advertiser server **312**, but may include a plurality of ARS and advertiser systems, indicated by the addition of ARS **314** and advertiser server A **316**, respectively. It should also be noted that this embodiment is not limited only to global communication networks, but also may be used with LAN, WAN, and peer-to-peer configurations.

It should also be noted that the disclosed embodiment is not limited to a personal computer, but is also applicable to, for example, a Network Computer ("NetPC"); a scaled-down version of the PC, or any system which accommodates user interaction and interfaces to information resources.

One typical application of the above noted technique is for providing a triggering event during a program, such as a sport event. In a first example, this may be generated by an advertiser. One could imagine that, due to the cost of advertisements in a high profile sports program, there is a desire to utilize this time wisely. If, for example, an advertiser contracted for 15 seconds worth of advertising time, they could insert within their program a tone containing the routing information. This routing information can then be output to the user's PC **302** which will cause the user's PC **302** to, via the network, obtain information from a remote location typically controlled by the advertiser. This could be in the form of an advertisement of a length longer than that contracted for. Further, this could be an interactive type of advertisement. An important aspect to the type of interaction between the actual broadcast program with the embedded routing information and the manufacturer's site is the fact that there is provided information as to the user's PC **302** and a profile of the user themselves. Therefore, an advertiser can actually gain realtime information as to the number of individuals that are watching their particular advertisement and also information as to the background of those individuals, demographic information, etc. This can be a very valuable asset to an advertiser.

In another example, the producer of the program, whether it be an on-air program, a program embedded in a video tape, CD-ROM, DVD, or a cassette, can allow the user to automatically access additional information that is not displayed on the screen. For example, in a sporting event, various statistics can be provided to the user from a remote location, merely by the viewer watching the program. When these statistics are provided, the advertiser can be provided with demographic information and background information regarding the user. This can be important when, for example, the user may record a sports program. If the manufacturer sees that this program routing code is being output from some device at a time later than the actual broadcast itself, this allows the advertisers to actually see that their program is still being used and also what type of individual is using it. Alternatively, the broadcaster could determine the same and actually bill the advertiser an additional sum for a later

broadcast. This is all due to the fact that the routing information automatically, through a PC and a network, will provide an indication to the advertiser the time at which the actual information was broadcast.

The different type of medium that can be utilized with the above embodiment are such things as advertisements, which are discussed hereinabove, contests, games, news programs, education, coupon promotional programs, demonstration media (demos), and photographs, all of which can be broadcast on a private site or a public site. This all will provide the ability to allow realtime interface with the network and the remote location for obtaining the routed information and also allow for realtime billing and accounting.

Referring now to FIG. **16**, there is illustrated an alternate embodiment of the present disclosure, this being the preferred embodiment. In the embodiment of FIG. **16**, as compared to that of FIG. **1**, the advertiser does not provide an advertisement in the form of a tone to the broadcast program source **104**. Rather, the program source **104**, which is remote with respect to the user PC **112**, is now replaced with a system which is local to the user PC **112**. This local system comprises an audio extractor **1600** which is operable to receive any of a number of analog and digital inputs, for example, which inputs include a video cassette recorder (VCR) **1602** for playing analog tape media having audio/video content thereon, a digital video disk (DVD) unit **1604** for playing DVD disk media having digital audio/video content thereon, a digital audio tape (DAT) unit for playing tape media having digital audio content thereon, and a compact disk (CD) unit **1608** for playing CD media having digital audio content thereon. Note that each of the aforementioned units (**1602**, **1604**, **1606**, and **1608**) may connect directly to the user PC **112** such that the extraction process using the audio extractor **1600** is performed internal to the user PC **112**. Each of the media have audible tones encoded thereon. These audible tones are extracted from the respective signals from one or more of the media by the audio extractor **1600** which may simply perform template matching in order to identify and extract the embedded tone information. The tone is then played through an audio transmitter **1612** (e.g., a speaker). An audio receiver **1614** (e.g., a microphone) connects to the user PC **112** and is operable to receive the audible tones from the audio transmitter **1612**. The analog audible signal is then converted to a digital signal by conventional means.

Software running on the user PC **112** responds to the audible tone received through the audio receiver **1614** by detecting and decoding the tone, and launching a communication program (e.g., a web browser program) which is operable to communicate over the network through the modem **114**. The software running on the user PC **112** assembles a message packet which contains routing information directed to the ARS **308** and the decoded information of the audible tone. The software running on the user PC **112** via the communication program facilitates the linking of the local node (where the user PC **112** is located) to the ARS **308** (an intermediate node location) and transmits the message packet in accordance with information stored in the program info database **116** through a the modem **114** to the ARS **308** disposed on the network.

It can be appreciated that the audio extractor **1600** is operable to accept any units or systems whose outputs contain audio signals. Furthermore, it can be appreciated that the audio extractor **1600** is operable to receive analog or digital signals containing audio content from the user PC **112** over a connection **1610**. For example, if the user of the user PC **112** desires to download an audio or audio/video file from a remote location on a network (not shown) on which both the remote location and the user PC **112** are disposed, the user may then play the file such that the video portion is displayed on the display **118** while the audio portion including the audible tone is output through the audio extractor **1600** to the audio transmitter **1612** of the user PC **112**. An audio receiver **1614** (e.g., a microphone) is operable to receive all audible audio signals, but working in conjunction with onboard architecture, responds only to those embedded audible tones.

Referring now to FIG. **17**, there is illustrated an overall diagrammatic view of the interconnection over the network of the user PC **112**, it now being referred to as user PC **1702** in FIG. **17**. The user PC **1702** is interconnected with the network **306**, as described hereinabove with reference to FIG. **3**, to allow the user PC **1702** to forward the decoded information of the received audible tone to the ARS **308**. As described hereinabove, this forwarding operation is facilitated by a detection operation in the user PC **1702**. The user PC **1702** detects the presence of the audible tone received from the audio source **1700**. (The audio source **1700** in this illustration comprises any of one or more of the audio sources—VCR **1602**, DVD **1604**, DAT **1606**, and CD **1608**.) The user PC **1702** then utilizes this information to connect to the ARS **308**, in conjunction with stored information in the user PC **1702**, and forwards the received tone or the decoded information contained therein, or even a portion of the information contained therein, to the ARS **308**. The ARS **308** utilizes this information for comparison with a relational database **1704** to define or to correlate the received tone information with routing information for a destination node **1706** on the network **306**. Once the ARS **308** has determined that there is routing information that correlates to the tone information received from the user PC **1702**, then this information is assembled in a packet and transferred back to the user PC **1702**. The user PC **1702** then utilizes this redirected routing information to allow the user PC **1702** to make a connection with the destination node **1706**. This destination node **1706** can then transmit information back to the user PC **1702** in the form of a web page or the such. As described hereinabove, a web browser software program is utilized to interface with the ARS **308** and the destination node **1706**.

As an example, consider the situation where a recording company contracts with a retail outlet store having a web page that resides at the destination node **1706** to control the user PC **1702** at the user location on the network. The recording company embeds a tone in the media to cause the user PC **1702** to connect to the retail outlet store destination node **1706** whenever that audible tone is transmitted from the recording media. For example, the retail outlet may be a video/music store that would desire certain specials or new releases to be relayed to a user at certain times during play of the recording media. The recording company can determine that a particular tone be embedded within an audio or video track on the media that is correlated with the destination node **1706** address of the retailer on the network **306**, and then transmit this tone at the appropriate time or at the appropriate point in the program. This need not be a specific time, or it can be a specific time in the program.

Therefore, the recording company can selectively control the user PC **1702** at a user location on the network **306** to connect to a desired destination node **1706** merely by injecting a tone into the recording media, or any other type of encoded information. This may be perceptible by the user or it may not be perceptible. Further, the embedded infor-

mation could cause an optical coupling between the user PC **1702** and the audio source **1700**, rather than an audio coupling means using both the audio transmitter **1612** and the audio receiver **1614**. It is only necessary that some code or information be embedded into the recording media and that there be some type of detector at the user's end to detect this information to then effect a connection over the network **306**. The implementation of the ARS **308** allows the recording company to initiate regular updates to the relational database **1704**. The updates may be new audio or video releases which are now linked in the relational database **1704** to the particular tone embedded in the recording media. In this way, the repeated use of the recording media by the user causes new information to be displayed to the user at the user PC **1702**, precluding the recording media from becoming "outdated."

In addition to being able to transmit the encoded information that is detected by the PC **1702** back to the ARS **308** from the user PC **1702**, a user ID in the user PC **1702** can be transmitted to the ARS **308**. The ARS **308** has contained therein a user profile database **1708** which is set up by the user when the software detection program is initially loaded, which user profile is associated with the user ID. This user profile information is optional, but can be utilized by the ARS **308** for multiple purposes. One of these purposes could be that the user profile information is appended to the routing information extracted from the relational database **1704** and forwarded back to the user PC **1702**. When the user PC **1702** and the browser program therein contact the destination node **1706**, the user profile information received from the ARS **308** is appended thereto. Therefore, the destination node **1706** will have information regarding the user that is contacting the destination node **1706**. The flexibility provided by the disclosed architecture is enormous in that the relational database **1704** may be structured to hold any amount of information related to the user such that play of the particular recording media at a particular moment in time triggers display of different information.

Referring now to FIG. **18**, there is illustrated a flowchart depicting the operation at the recording media architecture. The program is initiated at a block **1800** and then proceeds to a function block **1802** where the user inserts and plays the recording media. Flow is then to a function block **1804** where the audio extractor **1600** extracts the embedded tone signal from the audio/video signals of the recording media at the audio/video source **1700**. Flow is then to a function block **1806** where the audio extractor **1600** outputs the tone signal to the audio transmitter **1612**. Flow is then to a function block **1808** where the tone signal is received into the user PC **1702** by coupling the audible tone signal from the audio transmitter **1612** to the audio receiver **1614**. Flow is then to a function block **1810** where software running on the user PC **1702** assembles an intermediate node routing message packet. This intermediate routing message packet includes routing information of the intermediate node, the intermediate node in this particular disclosure being the ARS **308**. Additionally, the intermediate node routing message packet contains the tone signal or product identifier information decoded from the tone signal as extracted from the recording media. Flow is then to a function block **1812** where software running on the user PC **1702** launches a web browser for transmitting the intermediate node routing message packet across the network **306**.

Flow is then to a function block **1814** where the message packet is transmitted to the intermediate node (ARS **308**). Flow is then to a function block **1816** where a matching process occurs wherein the tone signal or decoded product information is obtained from the message packet and matched with corresponding tone signal information residing on the relational database **1704**. Flow is then to a decision block **1818** where the matching process is performed and if a match does not occur, flow is out the "N" path to a function block **1820** where a message is returned to the user indicating that the match was unsuccessful. If a match does occur, flow is out the "Y" path to a function block **1822** where a destination node message packet is assembled with routing information of the destination node corresponding to the tone signal. Flow is then to a function block **1824** where this destination node message packet having routing information of the destination node is transmitted back to the user PC **1702**. Flow is then to a function block **1826** where the user PC **1702** is then redirected to connect to the destination node **1706**. Flow is then to a function block **1828** where the destination node **1706** then returns information for display to the user PC **1702** corresponding to the tone signal information provided in the destination node message packet. Flow is then to an end point **1830** where the program terminates.

In summary, there is provided a method for allowing a user PC to be controlled in order to effect a connection between the user PC and a destination node on a network. This is facilitated through an audio source such as recording media having an embedded audio signal therein. When the recording media is played, the audio signal is extracted by an audio extractor and transmitted to the user PC, and detected by a program running in the background of the user PC. Once the audible tone is detected, a web browser is launched and the tone or decoded product identifier information associated with the tone is transmitted to an ARS on the network. The ARS then compares the information received from the user PC using information from a relational database. The relational database contains routing information for various destination nodes on the network. When a match occurs, the matching information is then forwarded back to the user PC and this is utilized to route the user PC to the particular destination node corresponding to the audible tone for the display of information therefrom.

Although the preferred embodiment has been described in detail, it should be understood that various changes, substitutions and alterations can be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A method for controlling a computer with recorded information of a digital audio tape, comprising;

embedding a unique code in the recorded audio information of the digital audio tape, the unique code in close association with vendor information;

extracting the unique code with an extractor during output of the recorded audio information to a user at a user location disposed on a network;

in response to extracting the unique code, transmitting the unique code to a remote location on the network in accordance with routing information stored at the user location and associated with an intermediate location on the network wherein the step of transmitting to the remote location further includes the steps of:

transmitting the unique code to the intermediate location;

accessing a database of vendor routing information in response to receiving at the intermediate location the transmitted unique code from the user location, the database providing an association between the

unique code and a remote vendor information location on the network, there being a plurality of such vendor routing information stored in the database;

comparing the received unique code with the stored vendor routing information in the database;

if there is a match between the received unique code and any of the stored vendor routing information, transmitting the matching vendor routing information back to the user location; and

in response to receiving the matching vendor routing information at the user location, interconnecting the user location with the vendor information location over the network and receiving vendor information therefrom, wherein the information is returned to the user location for processing.

2. The method of claim 1, wherein the user location further includes user ID information that uniquely identifies the user location, and

wherein the database at the intermediate node includes user profile information which is associated therein with the user ID information of the user location, and

wherein the step of transmitting the unique code over the network to the intermediate node also includes transmitting the user ID information to the intermediate location, and the step of matching further comprises matching the received user ID information of the user location with stored profile information associated with the received user ID information, and

wherein the step of transmitting the matching vendor routing information back to the user location further includes appending to the vendor routing information the stored profile information, and

wherein the stored profile information is transmitted to the remote vendor information location via the user location.

3. The method of claim 1, wherein the network is a global communication network that provides a universal resource locator (URL) for each location on the network and the routing information is comprised of the URL for the location.

4. The method of claim 1, wherein the unique code is an audible tone.

5. A method for controlling a computer with recorded information of a digital audio tape, comprising:

embedding a unique code in recorded information, the unique code in close association with vendor information;

extracting the unique code with an extractor during output of the recorded information to a user at a user location disposed on a network;

in response to extracting the unique code, transmitting the unique code to an intermediate location disposed on the network in accordance with routing information of the intermediate location stored at the user location;

performing a matching operation at the intermediate location with the unique code to return to the user location matching vendor routing information of a remote vendor information location disposed on the network, the remote vendor information location having the vendor information; and

accessing the remote vendor information location from the user location in accordance with the routing information of the remote vendor information location to return the vendor information for processing.

6. The method of claim 5, further comprising the steps of:

accessing a database of vendor routing information in response to receiving at the intermediate location the transmitted unique code from the user location, the database providing an association between the unique code and the remote vendor information location on the network, there being a plurality of such vendor routing information stored in the database; and

in response to receiving the matching vendor routing information at the user location, interconnecting the user location with the remote vendor information location over the network and receiving the vendor information therefrom.

7. The method of claim 6, wherein the user location further includes user ID information that uniquely identifies the user location, and

wherein the database at the intermediate node includes user profile information which is associated therein with the user ID information of the user location, and

wherein the step of transmitting the unique code over the network to the intermediate node also includes transmitting the user ID information to the intermediate location, and the step of matching further comprises matching the received user ID information of the user location with stored profile information associated with the received user ID information, and

wherein the step of transmitting the matching vendor routing information back to the user location further includes appending to the vendor routing information the stored profile information, and

wherein the stored profile information is transmitted to the remote vendor information location via the user location.

8. The method of claim 5, wherein the network is a global communication network that provides a universal resource locator (URL) for each location on the network and the routing information is comprised of the URL for the location.

9. The method of claim 5, wherein the unique code is an audible tone.

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